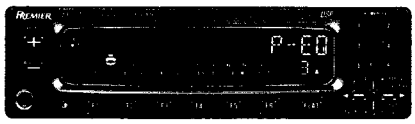
PIONEER
The Art of Entertainment

Service Manual

• DEQ-7500/US



ORDER NO.
CRT1462

DSP AUDIO PROCESSOR

DEQ-7500 US,EW
DEQ-7550 ES

CONTENTS

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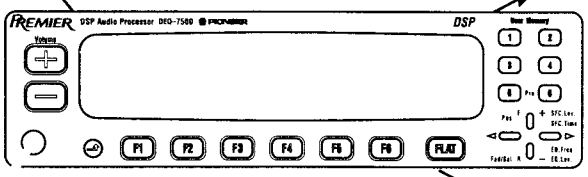
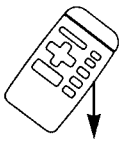
1. SPECIAL FEATURES OF THE DEQ-7500

Incorporating SFC*
Five Kinds of Sound Field Programs
- STUDIO
- JAZZ CLUB
- CONCERT HALL
- CATHEDRAL
- STADIUM

* SFC: Sound Field Control

Diverse Equalizing Function
① Parametric Equalizer
Allows four-band adjustment on front and rear output separately.
② Graphic Equalizer
Allows seven-band adjustment on front and rear output at the same time.
③ Parametric Bass/Treble
Allows adjustment of bass/treble on front and rear output separately or at the same time.
④ Parametric Subwoofer/Center
Allows adjustment of frequency and level of subwoofer/center.
⑤ Six Preset Memory for the User
- Memory Holding Function
- Memory Protect Function





Staging Function
Allows Selection of the Listening Position
- Matches listening position of sound image to your position in the vehicle
- Image focus control enables fine tuning of the listening position of sound image to suit vehicle conditions.

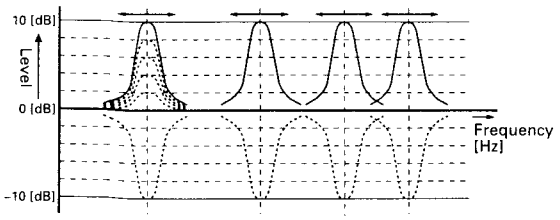
Multifunction Remote Control
① Adjustment of Main Volume
② Equalizer Curve Control
③ Switching of SFC Mode, Effect Adjustment
④ Switching of Sources on Head Unit

Equalizing Function

The following three functions from the equalizing functions incorporated in the unit switch the sound to a digital signal for processing.

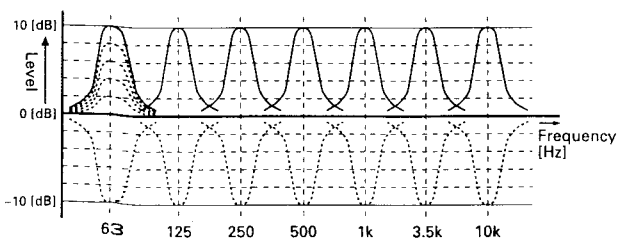
Parametric Equalizer

The parametric equalizer allows you to select four bands from 31 frequencies whose level you wish to adjust. It also allows separate adjustment of front and rear outputs.



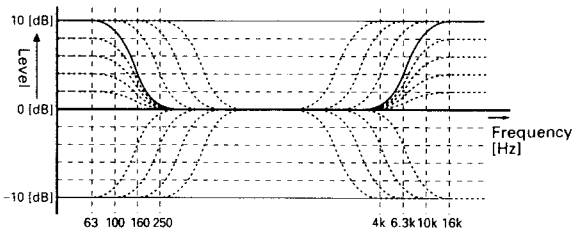
Graphic Equalizer

Allows you to adjust levels of preset seven bands.



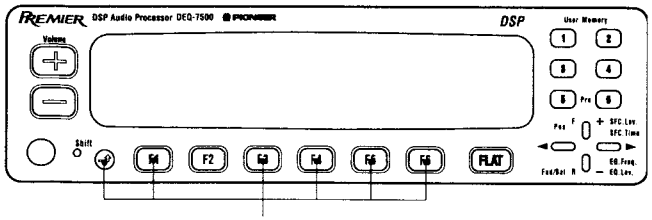
Parametric Bass/Treble

The unit's parametric bass/treble allows four stage selection of frequencies whose level you wish to adjust. It allows you to adjust the front and rear outputs separately or at the same time.



2. SELECTING THE VOLUME-TONE CONTROL MODE

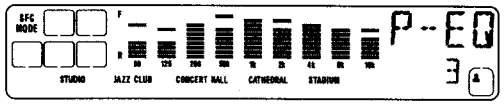
The unit incorporates the following modes for adjusting volume and tone. When setting volume and tone for each component, switch to the mode you wish to adjust first, using the illustration as a reference. For details, refer to the page number indicated in [ ].



Modes are switched using a combination of these buttons

Spectrum Analyzer Mode

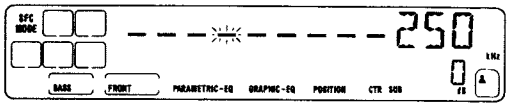
- Below are the four kinds of volume and tone is adjusted. Volume Adjustment [4], Fader Adjustment [4], Balance Adjustment [4], Sound Field Control (SFC) [5].



:The mode will switch with each press of the button

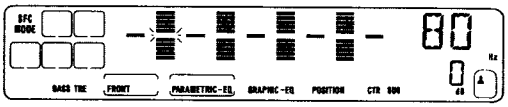
F1 : Bass and Treble Setting Mode [6]

- Adjust bass/treble on the front and rear output separately or at the same time.



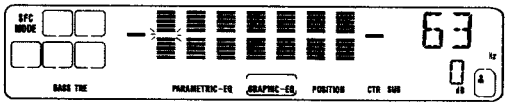
F3 : Parametric Equalizer Mode [8]

- Adjust parametric equalizer on the front and rear output separately.



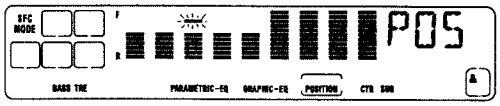
F4 : Graphic Equalizer Mode [8]

- Adjust graphic equalizer.



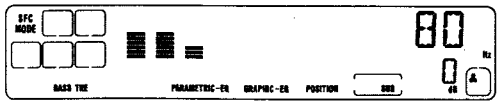
F5 : Listening Position Setting Mode [5]

- Adjust the listening position of the sound image. Refer to "Using Listening Position" on page 5 for details.

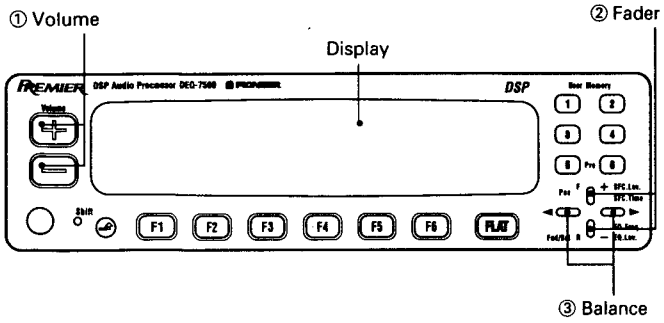


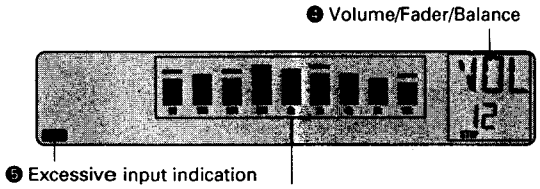
F6 : Sub-woofer/Center Setting Mode [9]

- Adjust frequency level of center and subwoofer output.



3. ADJUSTING THE VOLUME





Spectrum Analyzer (Peak Hold) Display
The power levels of the 9 frequency divisions are momentarily held and displayed.

Before adjusting the volume

When you use the unit for the first time, set the volume of the head units (such as the cassette deck) to the desired level using the following steps in order to adjust the total volume on the unit.

1 **Press the (–) side of button ① to set the volume of the unit to "VOL 0 STEP".**

2 **Set the volume of the head unit to "23".**

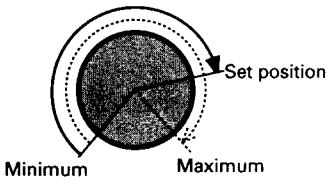
To adjust the volume on the head unit, refer to the Owner's Manual that accompanies the head unit.

Cautions in Adjusting Head Unit Volume

- When the head unit volume is excessive (excessive input to the unit), **"CLIP"** ❺ will be indicated on the display as a warning. In this case, turn the volume on the head unit down to the point where **"CLIP"** is no longer displayed.
- When you feel a distortion in the sound even though **"CLIP"** ❺ is not indicated on the display, turn the volume on the head unit down.
- The volume on the head unit will return to the initial setting when you remove the car battery or press the clear button on the head unit. In this case, set the volume again.

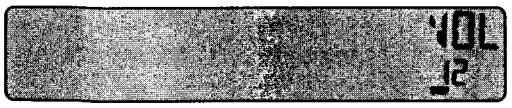
Note:

The volume's set point is not indicated on the display when you adjust the volume on the head unit by turning the volume control. In this case, set the volume control on the head unit to the position illustrated below, in accordance with step 2.



Adjusting the Volume

Pressing the (+) side of button ① increases the volume, while the (–) side of button ① decreases it.



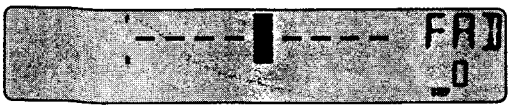
Notes:

- Always keep the volume inside the car at a level that allows you to hear outside sounds.
- Avoid high-volumes listening for long periods while the car engine is off or idling since this may exhaust the battery.

Adjusting the Fader

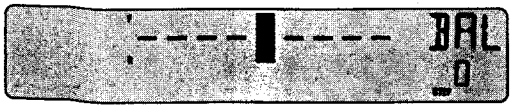
This function controls the between the front and rear speakers of a 4-speaker system. Pressing the upper side of button ② shifts the balance to the front speakers, while the lower side of button ② shifts it to the rear speakers.

For 2-speaker system, set to **"FAD 0"**.



Adjusting the Balance

Pressing left side of button ③ shifts the balance to the left speaker, while the right side of button ③ shifts it to the right speaker.

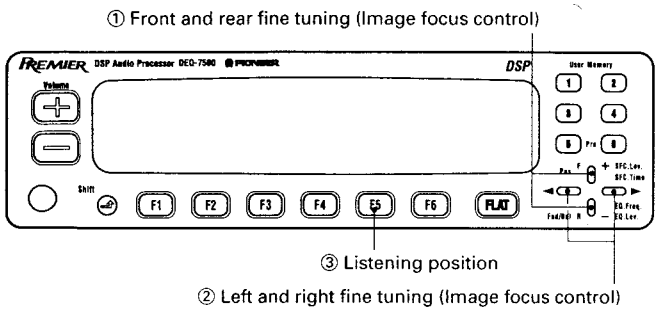


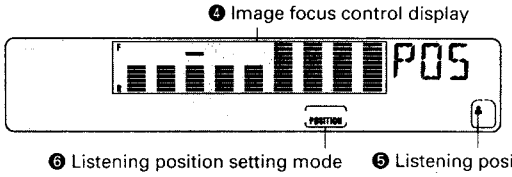
Notes:

- When you're adjusting fader or balance settings, the indicator will stop at the center setting.
- About 8 seconds after adjustment has been made, the display returns to its previous state.

4. USING LISTENING POSITION

Correction of sound image in accordance with your position in the vehicle





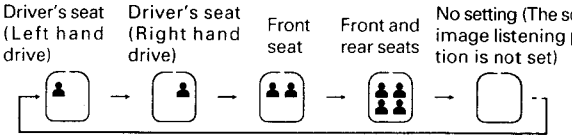
The distances to the front and rear, and left and right speakers will differ depending on your position in the vehicle. Therefore, the time it takes for the sound from each speaker to reach the listeners will vary, resulting in destabilized sound image. For example, the direction from which the vocals are heard may be unclear.
This function allows you to adjust the level and the time lag in the sound from the front and rear, and left and right speakers, and stabilize the sound image.

Note:

- The listening position is adjusted to match your position in the vehicle. However, other listening position may be more effective, depending on the model of the vehicle and the positions of speakers. Compare the sounds and set the listening position to the one that allows you to enjoy the most natural sound.

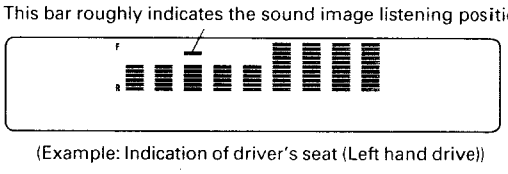
1 **Switch to listening position mode**
(Refer to "Selecting the Volume-tone Control Mode" on page 3.)

2 **Set the listening position to match your position in the vehicle. Every time you press button ③, the mode switches as follows:**



Note:
Setting is largely made by carrying out the operations up to step 2. Step 3 fine tunes the sound image listening point, enabling the sound to be set to the position where it is heard most naturally.

3 **Use the image focus control function to fine tune the sound image listening point to the front and rear, and left and right directions.**



(Example: Indication of driver's seat (Left hand drive))

Pressing the upper side of the button ① allows fine tuning to the front, while pressing the lower side allows tuning to the rear. Pressing the left side of button ② allows fine tuning to the left, while pressing the right side of the button allows tuning to the right.

5. USING SOUND FIELD CONTROL

What is Sound Field Control?

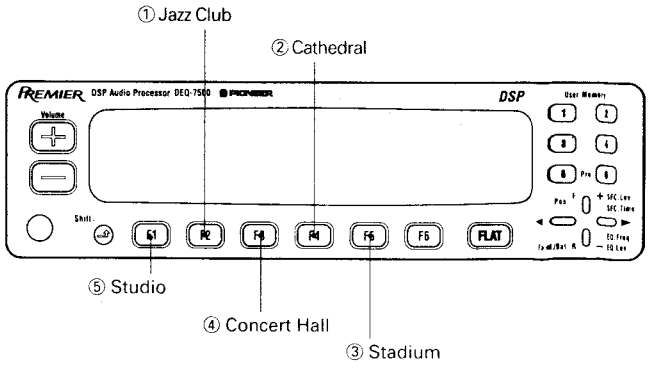
Creation of Sound Field

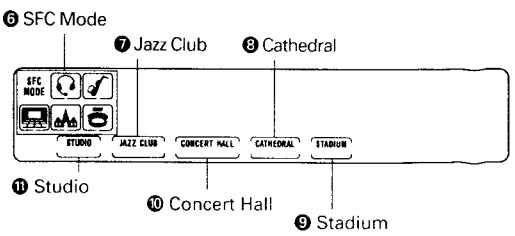
"Sounds" at a concert reach listeners from different directions and with different time lags. This is because the sounds resound in the space in the concert hall and resound off the ceilings and walls. But the sound field created in a vehicle is unique to the car audio. This is because it is not possible to obtain sufficient space or resonance in a vehicle. The DSP (Digital Signal Processor) incorporated in the unit processes sounds and creates five kinds of sound fields.

Note:

- As sound field control is most effective when the sound image is set at the listening position, refer to "Using the Listening Position" in the previous section to set the sound image at the listening position.
- Sound field control is more effective from the front output than the rear output of the unit. If you have a 2 speaker system, use the front output.

Using the Sound Field Control (SFC)





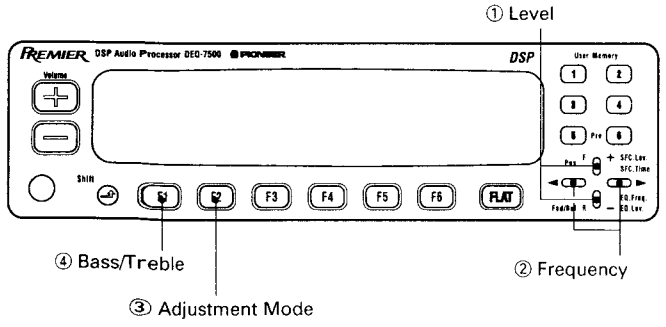
1 **Place the unit into spectrum analyzer mode.**
[See "Selecting the Volume-tone Control Mode" on Page 3.]

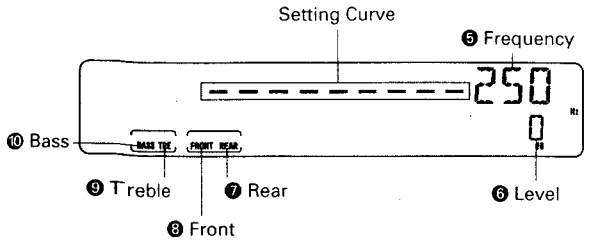
2 **Select the sound field program.**
Select a button from buttons ① to ⑤. (When you press the same button again, the button's function will be cancelled.)

Sound Field Program Stored in the Unit's Memory

Button	Symbol	SFC Mode	Outline of the Sound Field
F1		STUDIO (STUDIO)	The sound image is positioned to the front without echo. A basic sound field is created by processing initial sounds resounding against the walls of a relatively small mixing room.
F2		JAZZ CLUB (JAZZ CLUB)	The image of the sounds were taken from the space of a jazz club able to accommodate an audience of 50 to 100. This is most effective for use with live recordings. It creates very realistic echoes and sounds resounding against the walls.
F3		CONCERT HALL (CONCERT HALL)	This creates the sounds of an exclusive classical music hall able to accommodate an audience of between 1,000 to 2,000. With resounded sounds at a speed of 200 m sec. and ample echo appropriately distributed to each speaker, you can enjoy expansive sounds and their depth.
F4		CATHEDRAL (CATHEDRAL)	This creates the kind of sound field found in a church, mainly with ample, resonant echoes. This is effective with classical music. The feature of this setting is the enveloping echoes.
F5		STADIUM (STADIUM)	The image of the sounds were taken from a live performance at an outdoor stadium. Echoes are creaed by sounds resounding against distant walls. That effect creates a sound field that gives you the feel of the expansive space of a stadium.

6. ADJUSTING BASS AND TREBLE





Features of Bass and Treble Adjustment

- Changing to the tone adjustment mode allows you to adjust bass and treble of the front and rear speakers either separately or at the same time.
- You can set the desired frequency to serve as the basis of bass and treble adjustment can be set.
- The unit can be set to memorize different bass and treble settings.

Selecting the Tone Adjustment Mode

Your unit allows you to select two tone adjustment modes. Select the mode of your choice before adjusting the bass or treble.

Separate Adjustment Mode

In this mode, the tone of the front and rear speakers is adjused separately

Combined Adjustment Mode

In this mode, the tone of both front and rear speakers is adjusted at the same time

1 **Place the unit into bass and treble mode.**
[See "Selecting the Volume-tone Control Mode" on page 3.]
2 **Each press of button ③, will switch the adjust mode as follows:**

Separate Adjustment Mode; Front Speakers → **Separate Adjustment Mode; Rear Speakers** → **Combined Adjustment Mode**

FRONT → REAR → FRONT REAR

Adjusting Bass and Treble

This function allows you to select the frequencies to serve as the basis for bass and treble adjustments.

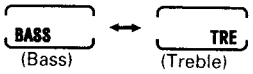
Using the Separate Adjustment Mode

In this mode, the tone of the front and rear speakers is adjusted separately. [See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

1 Place the unit into Bass and Treble Setting Mode.
[See "Selecting the Volume-tone Control Mode" on page 3.]

2 Press the button ③ to select the set speakers whose tone is to be adjusted (front or rear).
[See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

3 Press the button ④ to select bass or treble.
Each press of the button will switch it as follows:



4 Make the desired adjustment.
Adjust frequencies and bass and treble levels.

- **Frequency**

Pressing the left side of button ② will lower the frequency, while pressing the right side will raise the frequency. The following frequencies can be specified for of bass and treble adjustment:
Bass : 63 Hz ↔ 100 Hz ↔ 160 Hz ↔ 250 Hz
Treble: 4 kHz ↔ 6.3 kHz ↔ 10 kHz ↔ 16 kHz

- **Level**

Pressing the upper side of button ① will increase the level, while pressing the lower side will decrease the level.
–10dB ↔ –8dB ↔ ..... ↔ –2dB ↔ 0dB ↔ +2dB ↔ ..... ↔ +8dB ↔ +10dB

5 Repeat steps 2 to 4 to adjust the bass or treble of the other set of speakers.

Using the Combined Adjustment Mode

In this mode, the tone of the front and rear speakers is adjusted at the same time. [See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

1 Place the unit into Bass and Treble Setting Mode.
[See "Selecting the Volume-tone Control Mode" on page 3.]

2 Press the button ③ to select the combined adjustment mode.
[See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

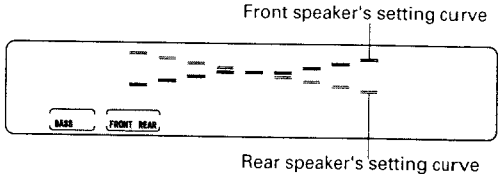
3 Press the button ④ to select bass or treble.
(Refer to step 3 in "Using the Separate Adjustment Mode.")

4 Make the desired adjustment.
(Refer to step 5 in "Using the Separate Adjustment Mode.")

Note:
When bass/treble are switched to combined adjustment mode after they are adjusted in their own mode separately, and when bass/treble in the front and rear output are switched to combined adjustment mode after they are adjusted in their own mode separately, front and rear settings done separately in their own mode will remain, and the bass/treble curves will be adjusted at the same time for those settings.

Points on the Use of the Combined Adjustment Mode After Adjusting the Tone in the Separate Adjustment Mode

- The set bass/treble curves are indicated simultaneously using a flashing bar (gray bar in the illustration below) for the rear setting and a illuminated bar (black bar in the illustration below) for the front setting.



- Adjusting bass/treble allows you to adjust frequencies and front and rear levels at the same time. However, when either the front or rear setting is at the maximum adjustment limit, further adjustment will not be possible.
- When front and rear bass/treble frequencies and levels are adjusted separately using their own modes, the frequency and level indicated on the display are the ones for front or for rear, depending on which was adjusted last.

7. EQUALIZER ADJUSTMENT

Selecting the Equalizer Mode

Your unit provides the two equalizer modes described below. Select the desired equalizer mode before adjusting the equalizer.

Features of the Parametric Equalizer Mode

- Allows adjustment of any 4 frequencies (bands) in an range from 20 Hz to 20 kHz
- Allows the equalizer curve for the front and rear speakers to be adjusted separately.

Note:
When the parametric equalizer has been set, the spectrum analyzer mode display will indicate **"P-EQ."**

Features of the Graphic Equalizer Mode

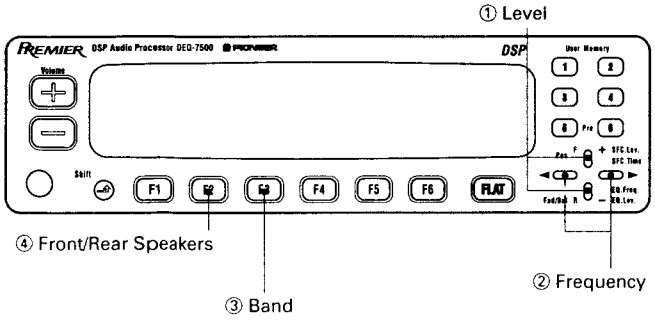
- Allows level adjustments for frequencies of 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 3.5 kHz and 10 kHz.

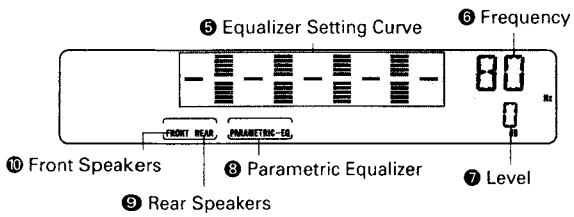
Note:
When the graphic equalizer has been set, the spectrum analyzer mode display will indicate **"G-EQ."**

Cautions in adjusting the Equalizer:

The levels for parametric and graphic equalizer displays can not be set at the same time. For example, switching to graphic equalizer mode and setting the level after you have set the frequency and level on the parametric equalizer will result in all bands of the parametric equalizer becoming flat (0 dB). Refer to "Using the Tone Control Memory" on page 9 to set and store memory tone controls.

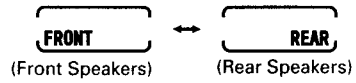
Using the Parametric Equalizer



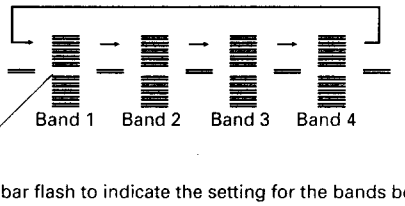


1 Place the unit into parametric equalizer mode.
[See "Selecting the Volume-tone Control Mode" on page 3.]

2 Press the button ④ to select the set of speakers (front / rear).



3 Press the button ③ to select the band to be adjusted.



4 Set the desired frequency.
Pressing the right side of button ② increases frequency, while the left side decreases frequency.

Note:

- It is not possible to set frequencies with bands (band 1 to 4) overlapping each other.

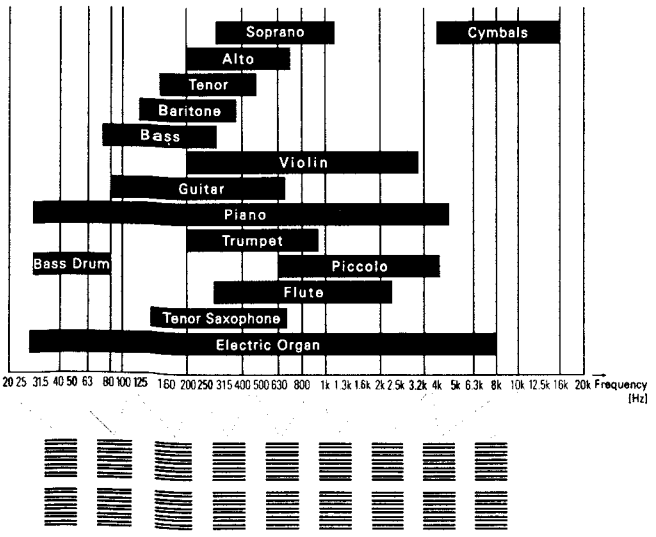
5 Set the desired level
Pressing the upper side of button ① increases the level, while the lower side decreases the level.

6 Adjust another band.
Repeat steps 3 to 5 for another band.

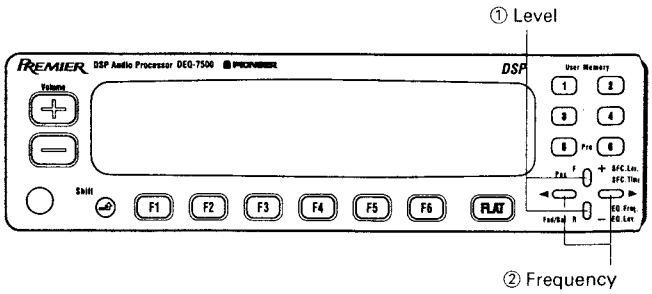
- Repeating steps 2 to 6 allows you to set the equalizer curve for the front and rear speakers separately.

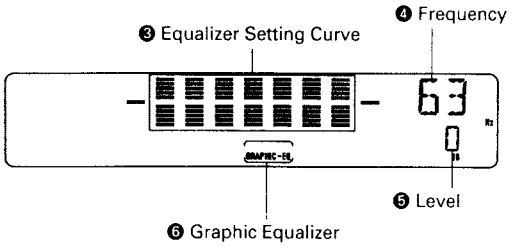
In adjusting frequencies:

- Frequencies being set (of frequencies which are possible to set) and band correspond as shown below. Adjust them using the illustration as a reference.



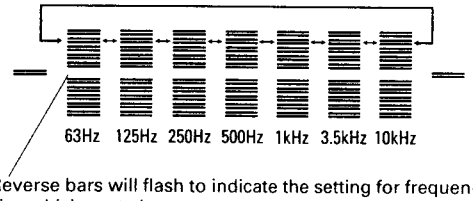
Using the Graphic Equalizer





8. ADJUSTING THE SUB-WOOFER/CENTER

1 Place the unit into graphic equalizer mode.
[See "Selecting the Volume-tone Control Mode" on page 3.]
2 Set the desired frequency.
Pressing the right side of button ② increases frequency, while the left side decreases frequency.
3 Set the desired level
Pressing the upper side of button ① increases the level, while the lower side decreases the level.
4 Set another frequency.



Reverse bars will flash to indicate the setting for frequencies which are to be set.

Repeat steps 2 and 3.

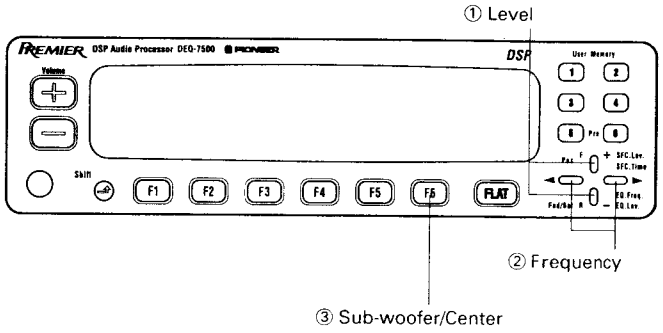
1 Place the unit into "Sub-woofer/Center Setting Mode".
[See "Selecting the Volume-tone Control Mode" on page 3.]
2 Press button ③ to select the output of Adjustment. (Sub-woofer/Center).
Each press of the button will switch it as follows:

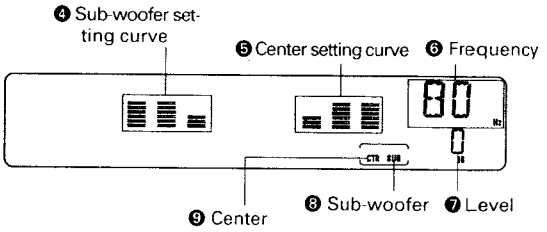
SUB (Sub-woofer) ↔ CTR (Center)

3 Make the desired adjustment.
Adjust frequency and level of the subwoofer and center output.
• Frequency
Pressing the left side of button ② will increase the frequency, while pressing the right side will decrease the frequency. The following frequencies can be specified for of sub-woofer and center adjustment:
Sub-woofer : 50 Hz ↔ 80 Hz ↔ 120 Hz
Center : 300 Hz ↔ 2.5 kHz ↔ 6.0 kHz
• **Level**
Pressing the upper side of button ① will raise the level, while pressing the lower side will reduce the level.

(OFF) ↔ −20dB ↔ −10dB ↔ −6dB ↔ −4dB ↔ −2dB ↔ 0dB ↔ +2dB ↔ +4dB ↔ +6dB ↔ +8dB ↔ +10dB

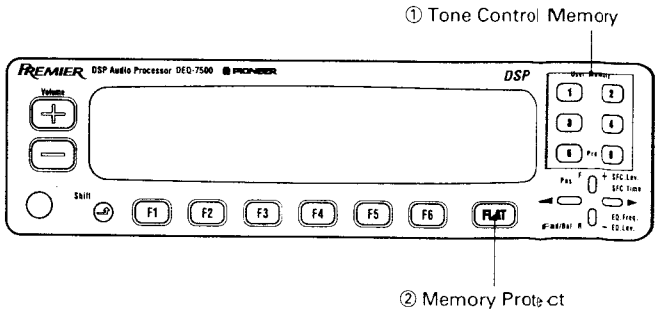
Note:
• The sub-woofer/center output becomes a monaural output. The sub-woofer/center output is not changed by adjusting the balance of this set.

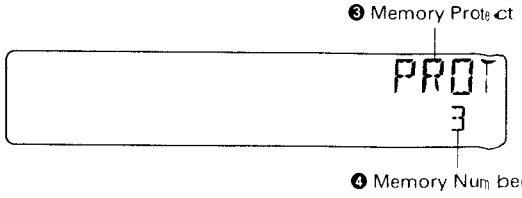




Adjust the frequency and level of the subwoofer and center output. The center speaker supplements missing sounds between left and right speakers. Enjoy the dynamic, heavy bass created by the sub-woofer.

9. USING THE TONE CONTROL MEMORY





The memory buttons can be used to memorize the bass, treble, and equalizer settings of your choice.

Memory Protect Function

The unit incorporates memory protect function to prevent you or the memory you have set for your favorite tone controls from being mistakenly erased. Once this function has been set, memory buttons [5] and [6] will become unavailable for tone control memory operations. Set the function when needed.

Note:

- The details stored in the memory buttons will be erased and the tone control memory cancelled when the car battery is removed or the reset button has been pressed. This will happen even if the memory protect function has been set. In this case, reset the function.
- The memory protect function will not be operating when you use the unit for the first time.

[1] Hold down button ② for more than 2 seconds.

When you hold down the same button for more than 2 seconds, it becomes cancelled.

- Holding down the button for less than two seconds switches to the flat setting.

Note:

While you are setting the memory protect function, no indication will be on the display. Should you attempt to store memory in the memory buttons [5], [6], **"PROT"** ❸ will flash on the display, indicating that the memory protect function is operating and memory is therefore unable to be stored.

Memorizing Tone Settings

Note:

Tone controls can be stored in memory while the unit is in the following three modes. Pressing a tone control memory button while the unit is in a mode other than the below three switches the unit to tone setting (refer to the next section).

"Bass and Treble Setting Mode"
"Parametric Equalizer Mode"
"Graphic equalizer Mode"

[1] Adjust the bass and treble as desired.

[See "Adjusting Bass and Treble" on page 6.]

[2] Adjust the equalizer.

[See "Equalizer Adjustment" on page 7.]

[3] Memorize the setting.

Press and hold down one of the buttons in bank ① for at least two seconds.

- Holding down the button for less than 2 seconds recalls the previously memorized tone or equalization settings. [See next section.]

Note:

Memory can not be stored in tone control memory buttons [5] and [6] when the memory protect function has been set. Should you wish to store memory, cancel the function by refering to "Memory Protect Function" in the previous section.

Recalling Memorized Tone Settings

The following procedure allows you to recall tone and equalizer settings that have been previously memorized to the memory buttons.

[1] Recall the desired tone setting.

Once a tone setting is assigned to a button in bank ①, you just need to press that button to set it in. This also causes the number of the button pressed to appear at position ❹ on the display.

- Holding down the button for more than 2 seconds activates the memorization function. [See previous section.]

10. CONNECTING THE UNITS

- Before Making final connections, make temporary connections then operate the unit to check for any connection cord problems.
- Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.
- Be sure to connect the memory power supply lead (orange) to a terminal that is always supplied with power regardless of the vehicle's ignition switch position.
- Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.
- The separately sold digital fiber optic cable CD-D60 or a similar product must be used to connect the main unit with the multi-play CD player or CD player. To obtain the CD-D60, please contact your nearest PIONEER dealer.
- The Digital Fiber Optic Cable transmit light through its terminal structure and therefore should not be subjected to sharp bending or high pressure. If bending cannot be avoided, make sure the bend does not describe a circle with a radius of less than 25 mm. For details, refer to the precautions included with the Digital Fiber Optic Cable.

When using digital input

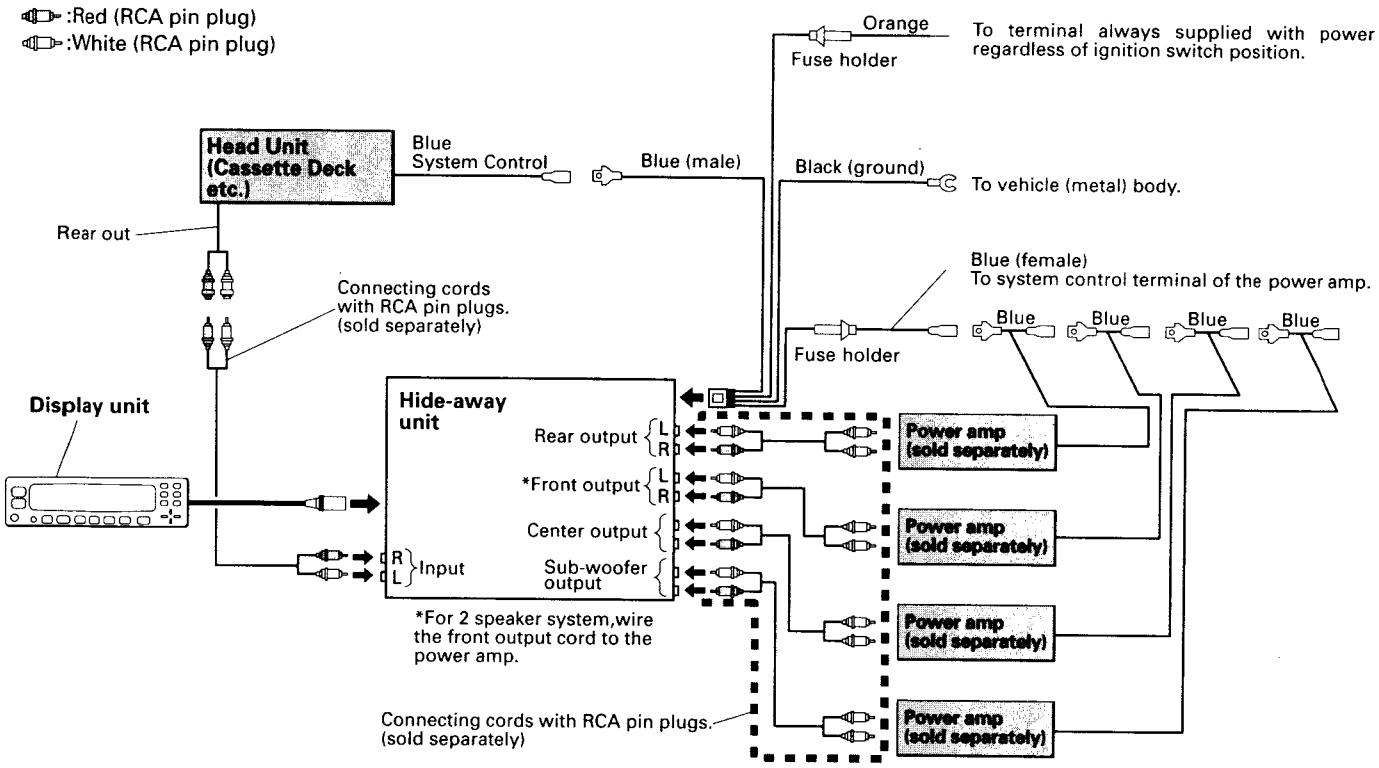
Even when using digital input, use analog input (RCA terminal) at the same time. Refer to example 2 of the connection diagram for wiring.

Upon Completion of Wiring

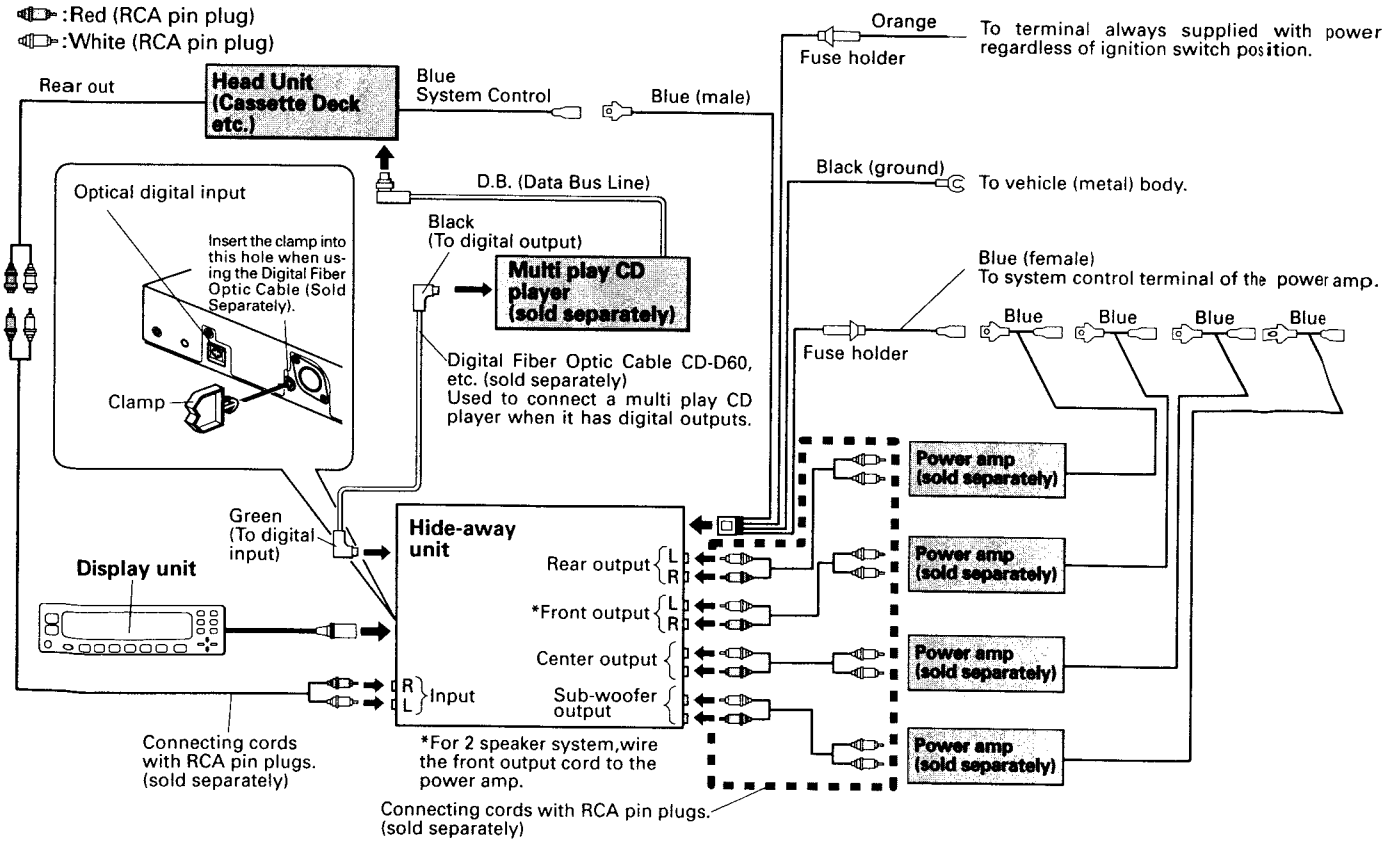
After wiring has been completed, use a sharp point such as a pencil tip to press the clear button on the Hide-away unit, main unit and the multi-play CD player

Connection Diagram

Example 1:



Example 2:



11. SPECIFICATIONS

Power source ..... 14.4V DC (10.8 — 15.6 V allowable)
Grounding system ..... Negative type
Dimensions (Display unit) ..... 170 (W) × 46 (H) × 25 (D) mm
[6-3/4 (W) × 1-3/4 (H) × 1 (D) in.](US)
(Hide-away unit) ..... 203 (W) × 35 (H) × 178 (D) mm
[8 (W) × 1-3/8 (H) × 7 (D) in.](US)
Weight ..... 1.4 kg (3.1 lbs)(US)
Tone controls (parametric)
(Bass) Frequency ..... 63 Hz, 100 Hz, 160 Hz, 250 Hz
(Treble) Frequency ..... 4 kHz, 6.3 kHz, 10 kHz, 16 kHz
Equalization range ..... ± 10 dB
Equalizer
(4 band parametric EQ)
Frequency ..... 20 Hz, 25 Hz, 31.5 Hz, 40 Hz
50 Hz, 63 Hz, 80 Hz, 100 Hz
125 Hz, 160 Hz, 200 Hz
250 Hz, 315 Hz, 400 Hz
500 Hz, 630 Hz, 800 Hz
1 kHz, 1.3 kHz, 1.6 kHz
2 kHz, 2.5 kHz, 3.2 kHz
4 kHz, 5 kHz, 6.3 kHz, 8 kHz
10 kHz, 12.5 kHz, 16 kHz, 20 kHz
Equalization range ..... ± 10 dB
(7 band EQ)
Frequency ..... 63 Hz, 125 Hz, 250 Hz, 500 Hz
1 kHz, 3.5 kHz, 10 kHz
Equalization range ..... ± 10 dB
Sub-woofer output
Frequency ..... 50 Hz, 80 Hz, 120 Hz
Level ..... − ∞ — +10 dB
Center output
Frequency ..... 300 Hz, 2.5 kHz, 6.0 kHz
Level ..... − ∞ — +10 dB
Distortion ..... 0.01 % (1 kHz, 250 mV, 20 kHz LPF)
Frequency response ..... 20 —20,000 Hz (0, −1dB)

Signal-to-noise ratio
(Optical Input) ..... 96 dB (IHF-A network)(US)
96 dB (IEC-A network)(ES)
(RCA Input) ..... 90 dB (IHF-A network)
90 dB (IEC-A network)(EW,ES)
Input level/Impedance ..... 500 mV/22 kΩ
Output level/Impedance ..... 500 mV/1 kΩ

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

Note:
Specifications and the design are subject to possible modification without prior notice due to improvements.

12. DISASSEMBLY

● Removing the cover.

1. Remove the two screws.
2. Remove the cover.

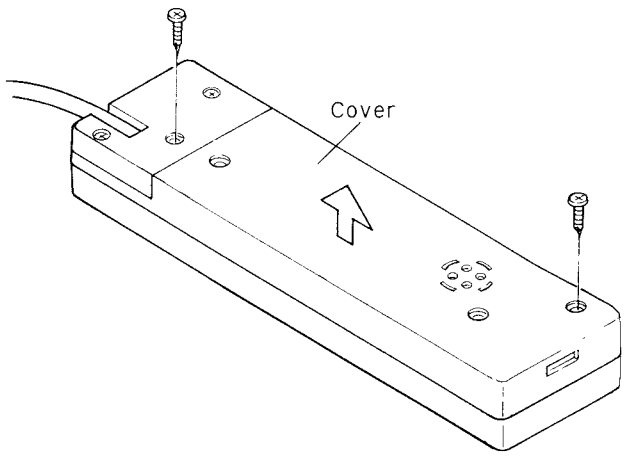


Fig. 1

● Removing the Display P.C.Board.

1. Disconnect the two connectors.
2. Remove the two screws.
3. Press the claws at two locations indicated by arrows and then raise the Display P.C.Board to remove.

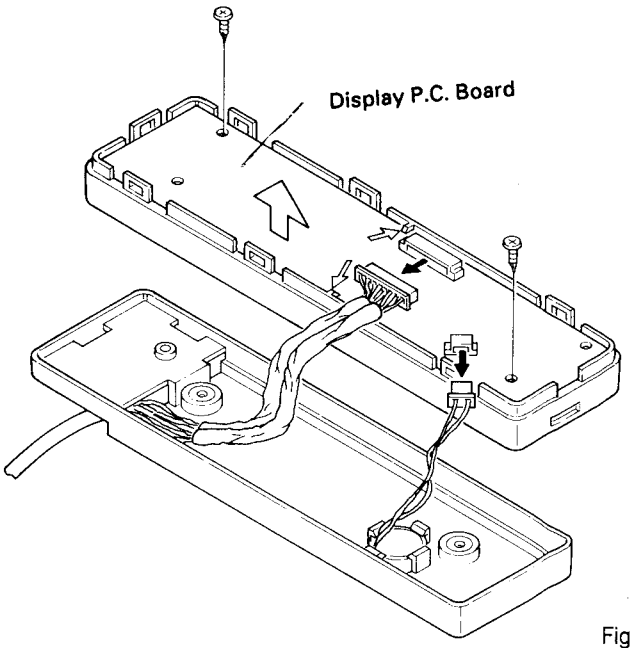


Fig. 2

● Removing the case.

1. Remove the four screws.
2. Remove the case.

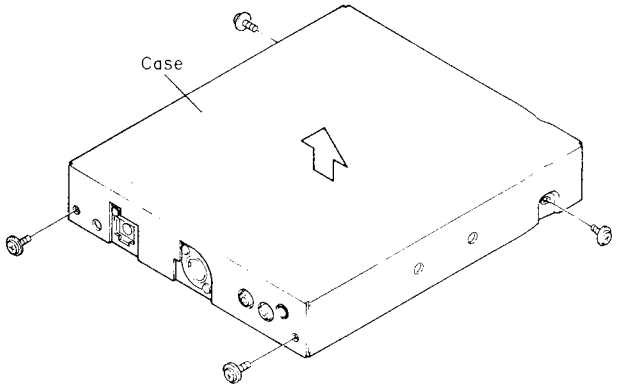


Fig. 3

● Removing the chassis.

1. Remove the five screws.
2. Unbend the claws at five locations indicated by arrows until straight.
3. Remove the chassis.

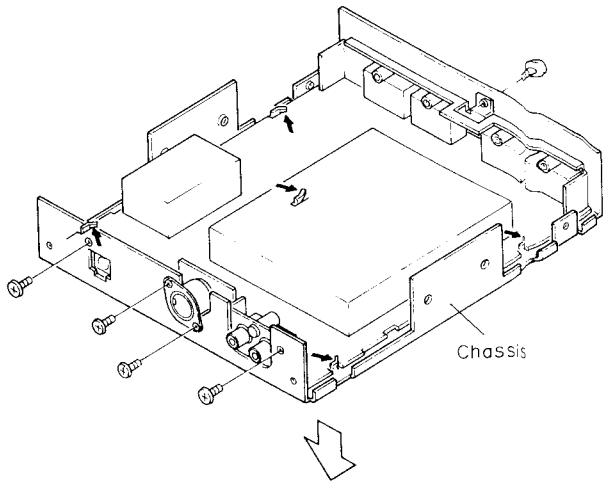


Fig. 4

● Removing the DSP Unit.

1. Remove the solders and unbend claws at four locations indicated by arrows.
2. Remove the plug.
3. Remove the two connectors.

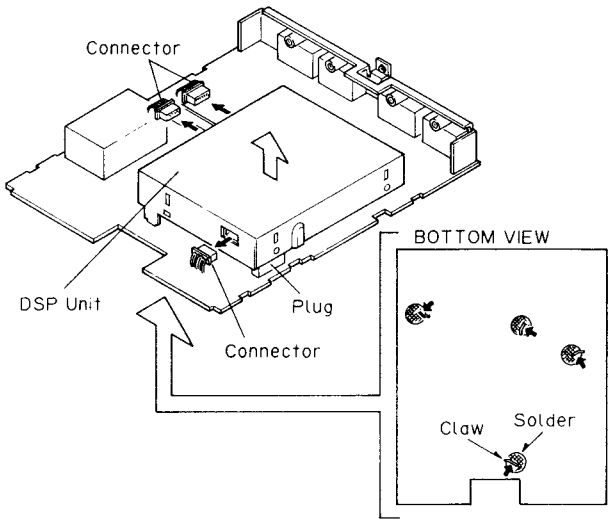


Fig. 5

● Removing the DSP P.C.Board. (1/2)

1. Insert tweezers to remoce the case.

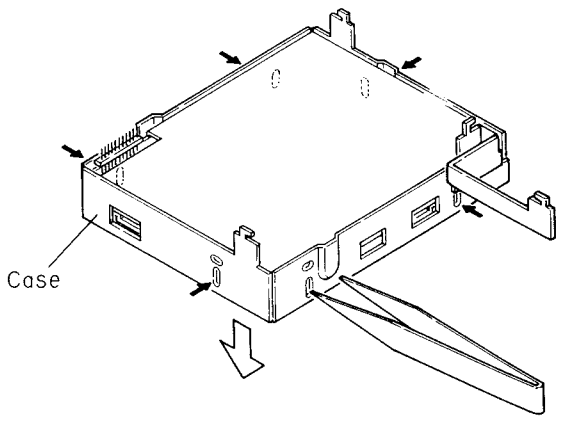


Fig. 6

● Removing the DSP P.C.Board. (2/2)

1. Remove the solder at a location indicated by arrow.
2. Unbend the claws at three locations untill straight.
3. Remove the case.

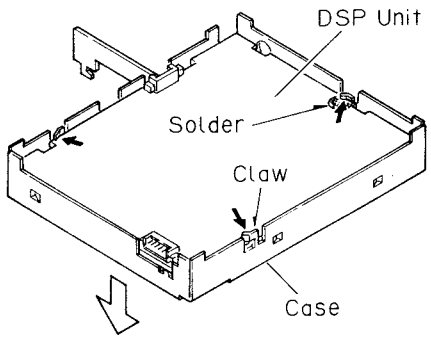
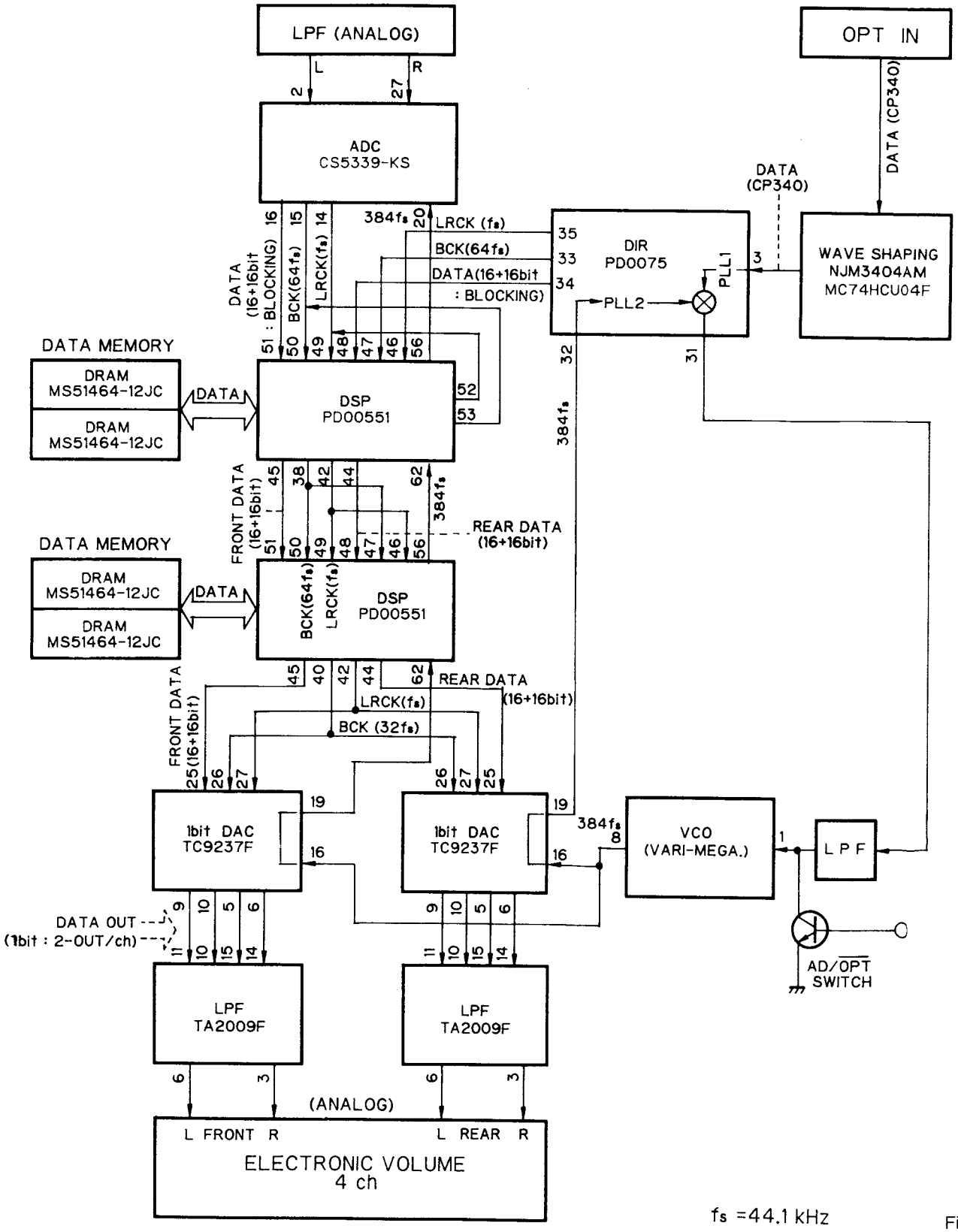


Fig. 7

13. CIRCUIT DESCRIPTION

• Audio signal flow



fs =44.1 kHz

Fig. 8

13.1 Initializing the system

Setting all the input ports of the system microcomputer(PD4374C); BSENS (pin48), BTB (pin47) and DSENS (pin 46) at L brings $\overline{\text{SUBPW}}$ (pin39) to L, which allows Vdd to be supplied to the key microcomputer (PD4334B) via Q513.

Then, after the key microcomputer has been reset, an enable code is sent from REMOUT (pin5) to REMIN (pin49) of the system microcomputer to initialize the system.

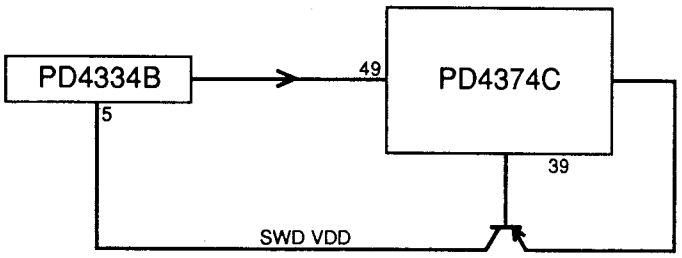


Fig.9

Note) If the key microcomputer does not transmit an enable code within 300 msec. after $\overline{\text{SUBPW}}$ has been set at L, the communication is regarded as being abnormal. In this case, put $\overline{\text{SUBPW}}$ in Hi state, reset the key microcomputer and repset the above procedure. If this procedure fails to be done five times, initializing can be accomplished only by inputting either BTB or DSENS and BSENS again.

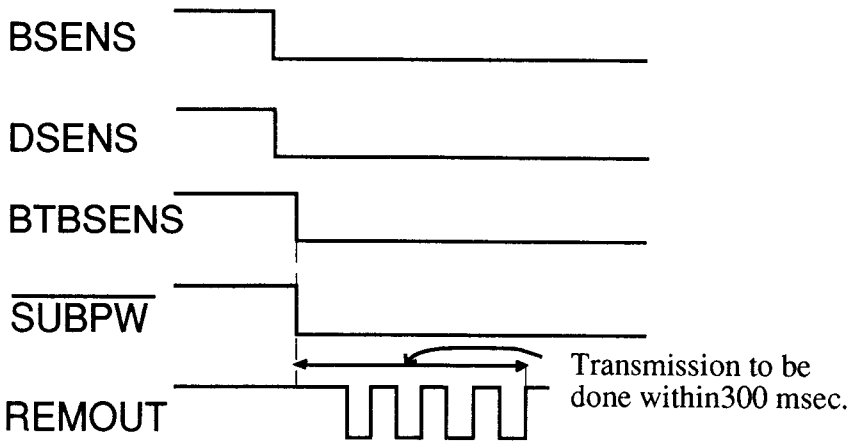


Fig.10

13.2 Audio signal flow

1) Analog signals are amplified about 14 dB by the flat amplifier and input through LPF to the AD converter for conversion into digital signals.

2) The data converted into 16-bit digital signals by the AD converter is input to pin 51 of IC806 for signal processing (GEQ, parametric).

3) The data for front assigned at pin 45 (AOUT1) of IC806 and the data for rear assigned at pin 44 (AOUT2) are input to the second chip IC807. After signal processing (position control, parameetric, BASS, TRE) is carried out again, both the data are converted into analog signals through the LPFs of DA converters (IC811 and IC813) for the front data and rear data.

4) As for SFC, reverberation is produced by IC804 and IC805 and initial reflecting sounds are produced by IC801 and IC802.

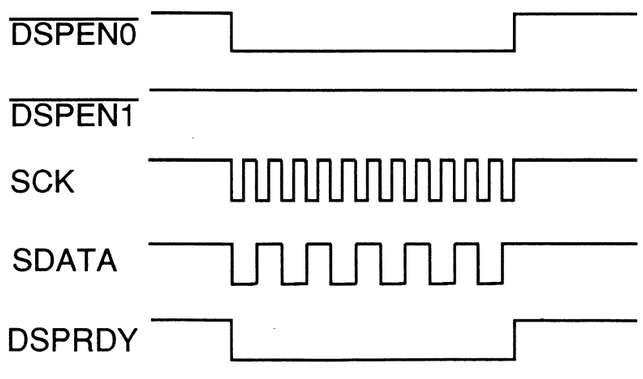
13.3 Communication between DSP and the system microcomputer

Communication between PD4374 and IC803 and IC806 (PD00551) is carried out by sending 8-bit data and by verifying a return of DSPRDY.

Two DSP chips commonly use SCK and SDATA, so that selection of a chip is made by DSPEN0 and DSPEN1 that specify a chip with which the system will communicate.

When DSPEN is placed in Hi stste, however, the sent data is ignored.

For actual communication, if data is to be sent to IC806, set DSPOEN0) at L and DSPEN1 at Hi to select IC806 and send 8-bit data as one cycle using SCK and SDATA. When DSPRDY does not become Hi, the communication is regarded as being abnormal. In this case, reset the DSP by DSPRESET and retry communication.



(When data is sent to IC806.)

Fig.11

13.4 OPT analog switching

1) When optical data input is incoming from a multiplexer channel, etc. via CN601 (optical input receptacle). the data is input to pin 3 of PD0075 (IC810) through the waveform shaping circuit. This brings ERR1, 44.1K of IC810 to L, which, in turn, brings ERR1 assigned at pin 19 of PD4374C to L.

2) When pin 19 of PD4374C becomes L, pin 67 of ADC/DiR is put in L state.

3) Setting ADC/DIR at L turns Q802 off. Then, IC810, IC808 and IC813 makes PLL, and VCO is locked to 3845S (16.934MHz). This brings ERR2 assigned at pin 39 of IC810 to L. which is input to pin 18 of PD4374C.

4) Setting pins 18 and 19 at L causes PD4374C to judge the input as optical data . Then , PD4374C calls a program out of the IC 552 to switch the input of DSP (IC806) to optical input. The input change is accomplished by sending the data to DSP.

Note) Cancel release of ERR1 and ERR2 is carried oit at the fifth leading edge of the pulse which is input from CNTR, pin 9 of IC810 after the recovery from an error.

1 Waveform shaping circuit

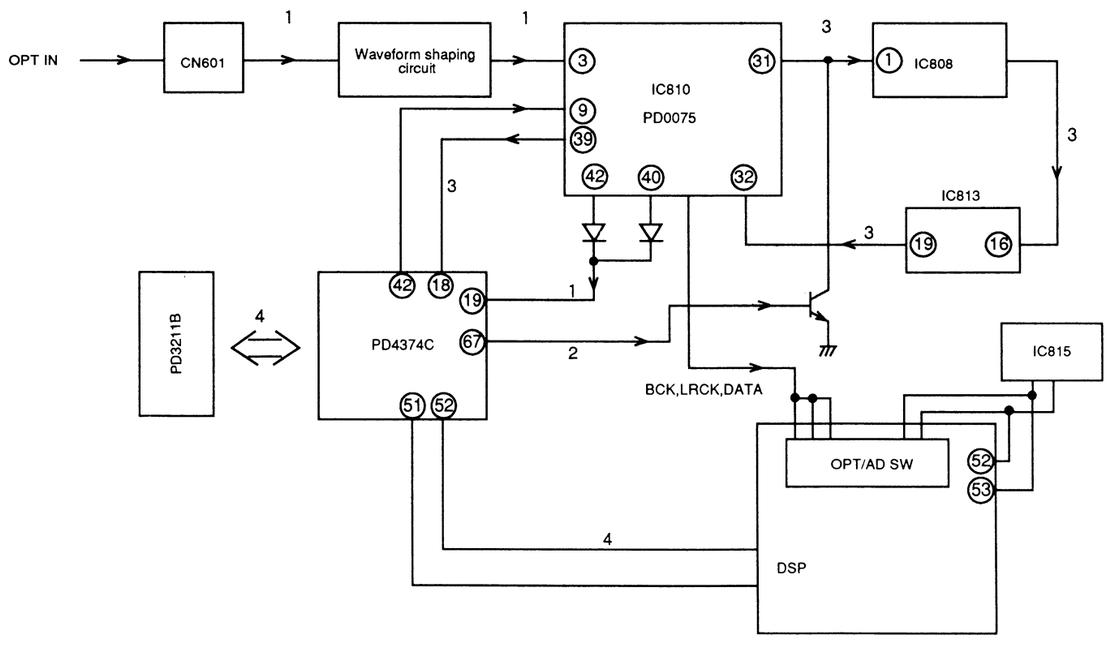
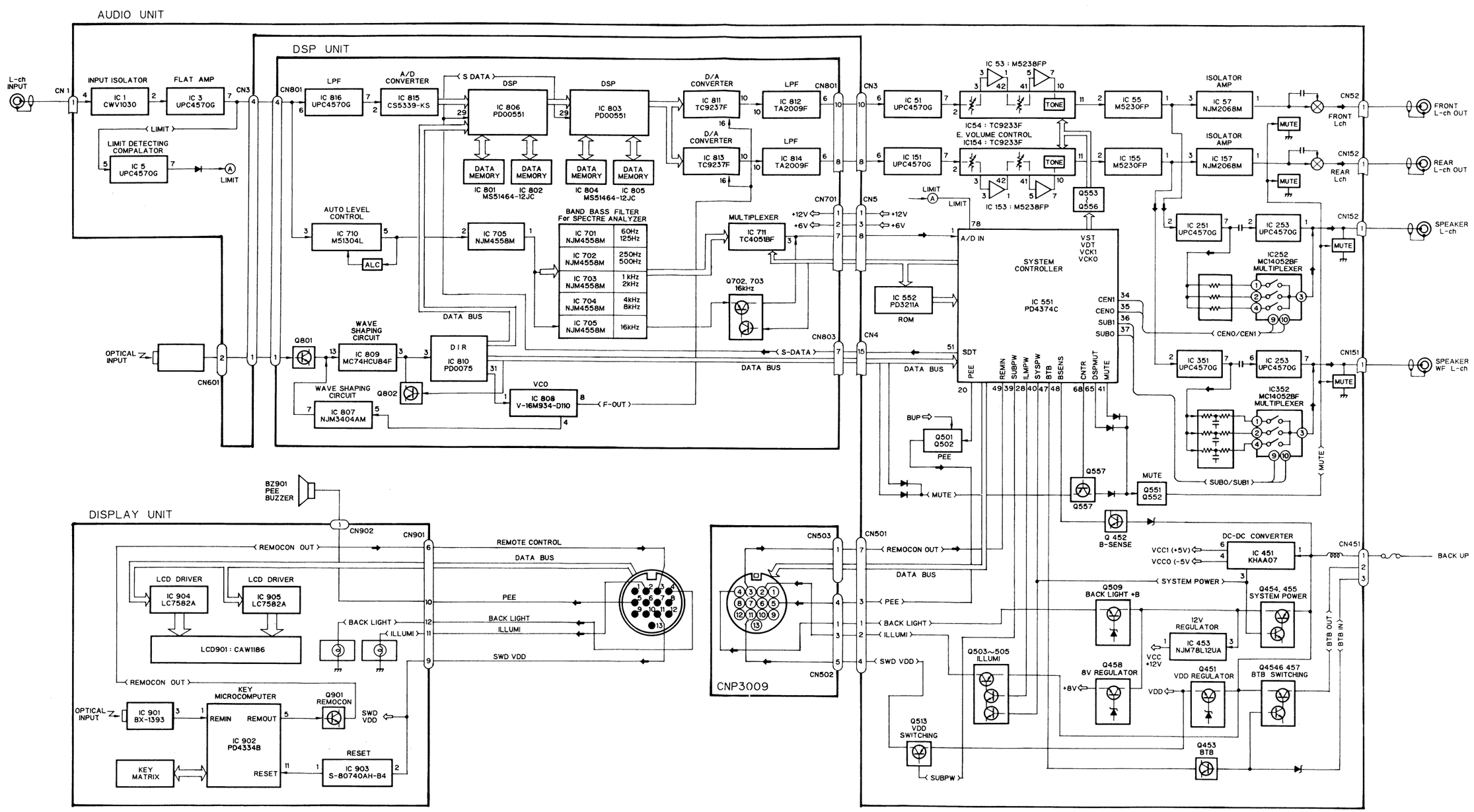


Fig.12

• Block Diagram

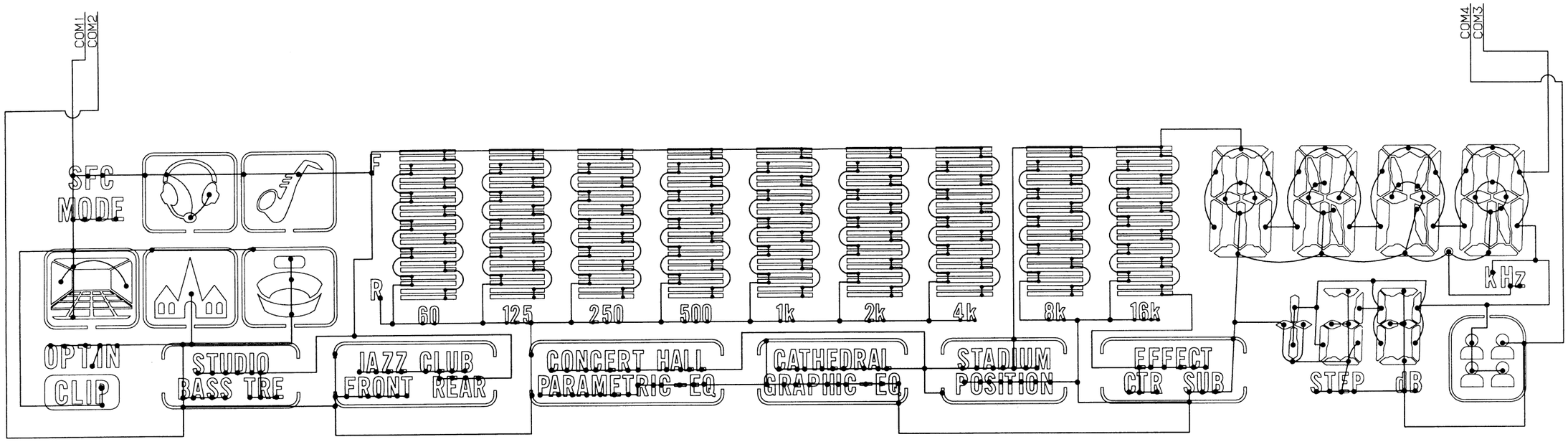


*REMOCON = REMOTE CONTROL

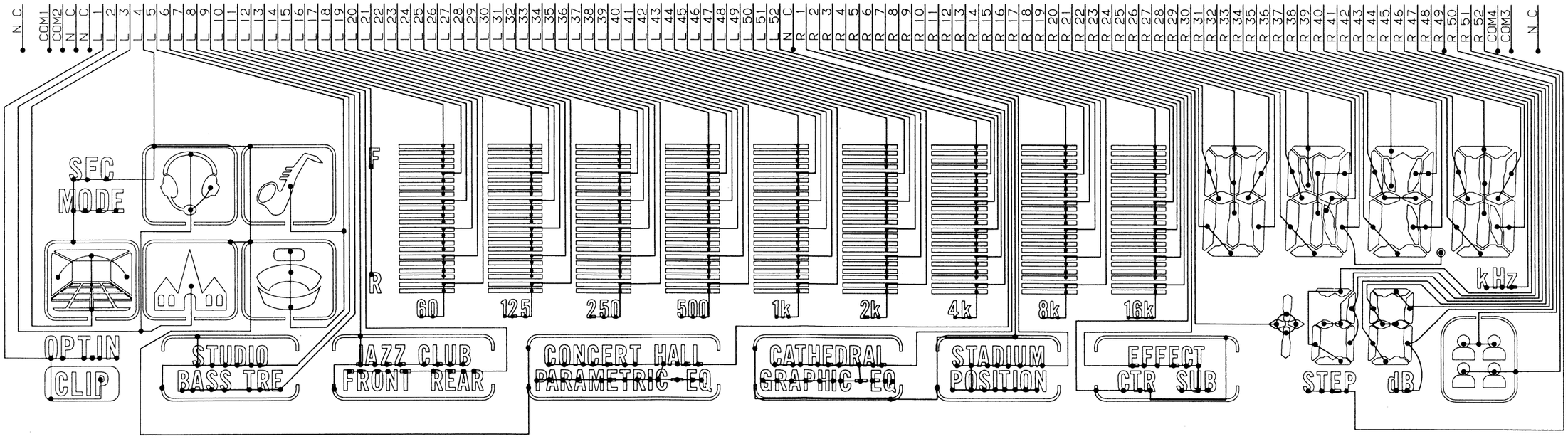
Fig. 13

• **LCD (CAW1186)**

COMMON



SEGMENT

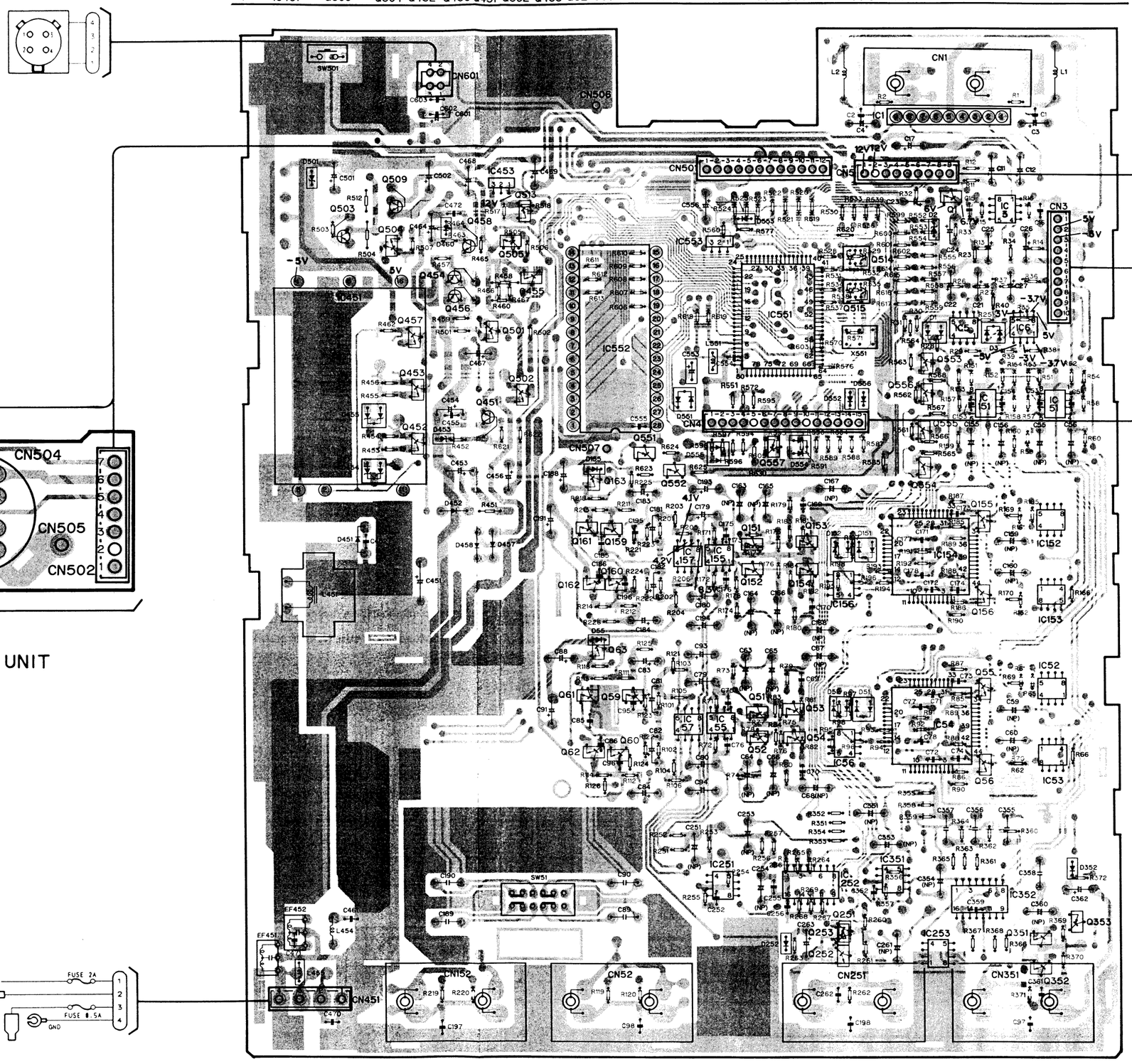


14. CONNECTION DIAGRAM(1)

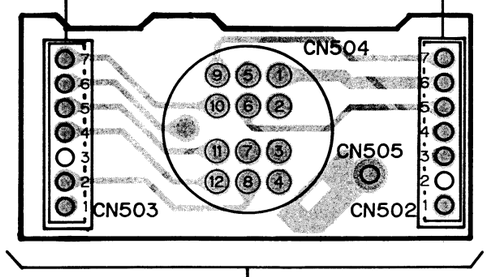
- **Audio Unit**

AUDIO UNIT

IC, Q IC451 Q503 Q509 Q504 Q457 Q453 Q452 Q458 Q454 Q456 IC453 Q501 Q451 Q513 Q505 Q502 Q163 Q161 Q162 Q63 Q61 Q62 IC552 Q159 Q160 Q60 Q551 Q59 Q552 IC157 Q57 IC553 IC155 IC55 IC251 Q151 Q152 Q51 Q52 Q153 Q154 IC252 Q53 IC551 Q557 IC156 IC56 Q251 Q253 Q252 Q514 Q515 Q553 Q556 Q555 Q554 IC351 IC5 Q155 IC154 IC54 IC1 Q253 Q156 IC151 Q55 Q56 IC352 IC6 IC3 IC152 IC153 Q351 Q352 IC53 Q353



DIN P.C. BOARD



DISPLAY UNIT

US, ES	EW
Q557	R605
D554	R618
D555	R619
R597	D556
R598	
R630	
C601	
C602	

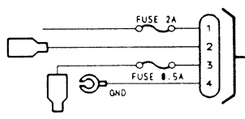
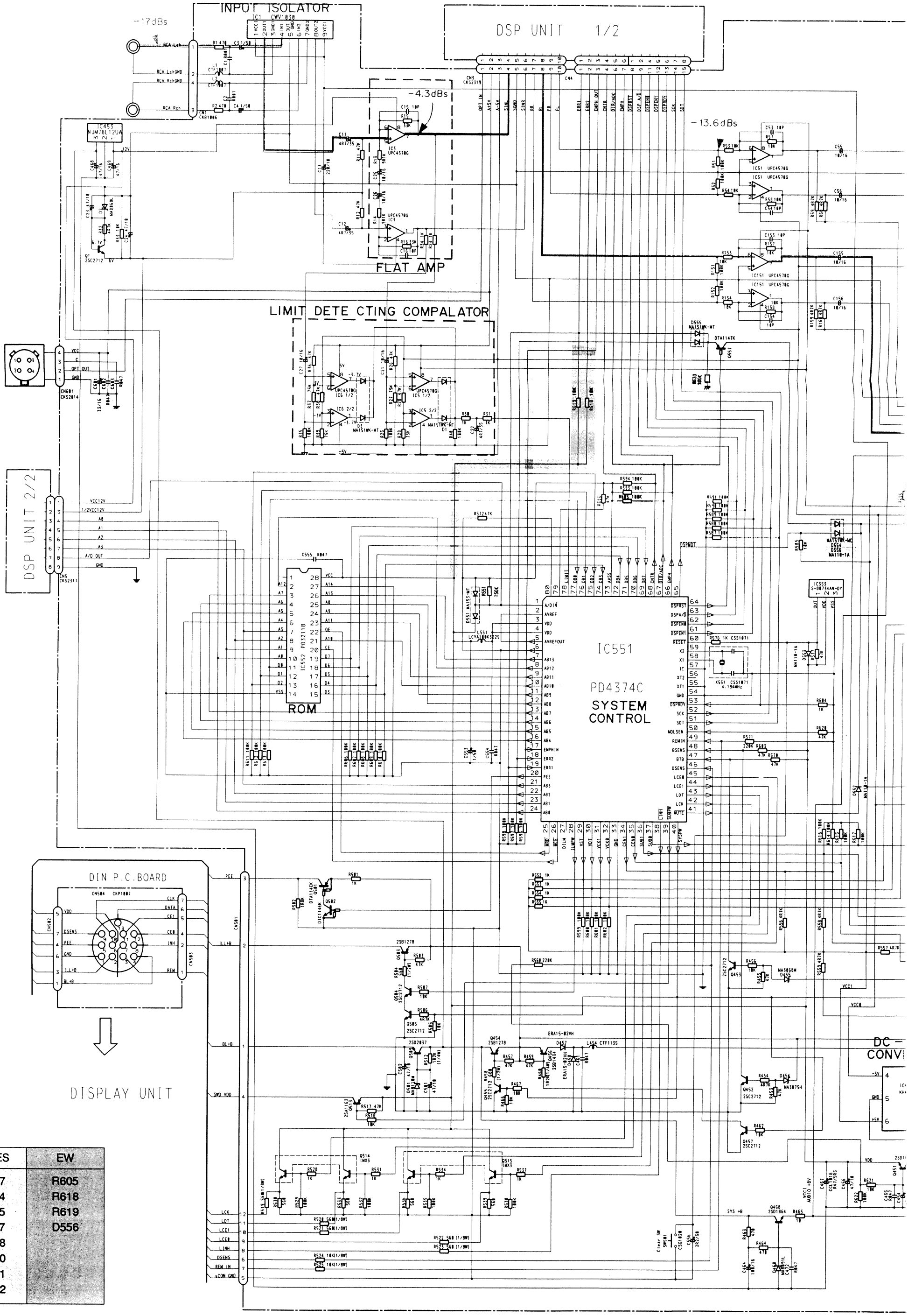


Fig. 14

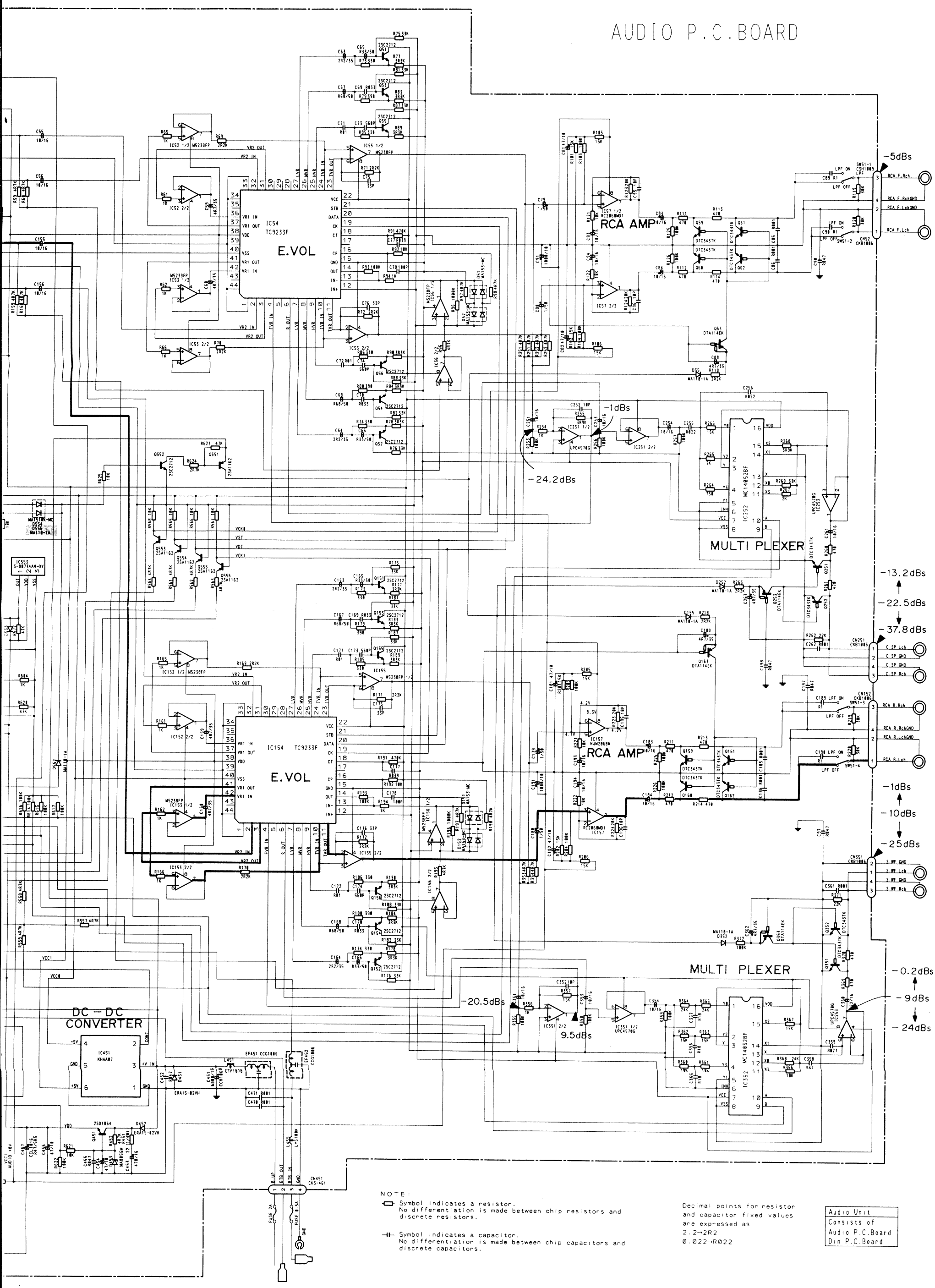
15. SCHEMATIC CIRCUIT DIAGRAM(1)

- **Audio Unit**



US, ES	EW
Q557	R605
D554	R618
D555	R619
R597	D556
R598	
R630	
C601	
C602	

AUDIO P.C.BOARD



NOTE:

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

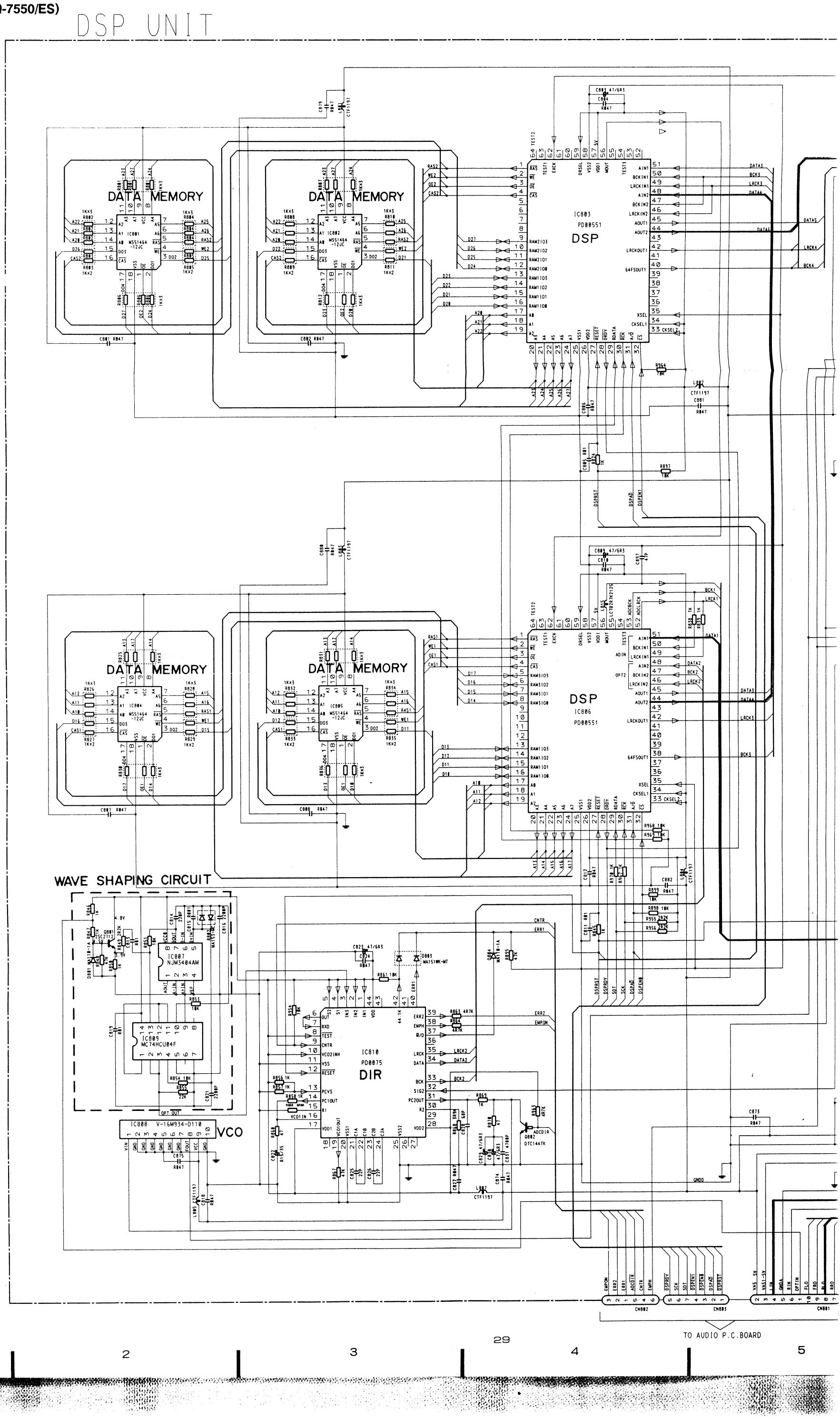
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Audio Unit
Consists of
Audio P.C.Board
Din P.C.Board

Fig. 15

16. SCHEMATIC CIRCUIT DIAGRAM(2)

- **DSP Unit (DEQ-7500/US, DEQ-7550/ES)**



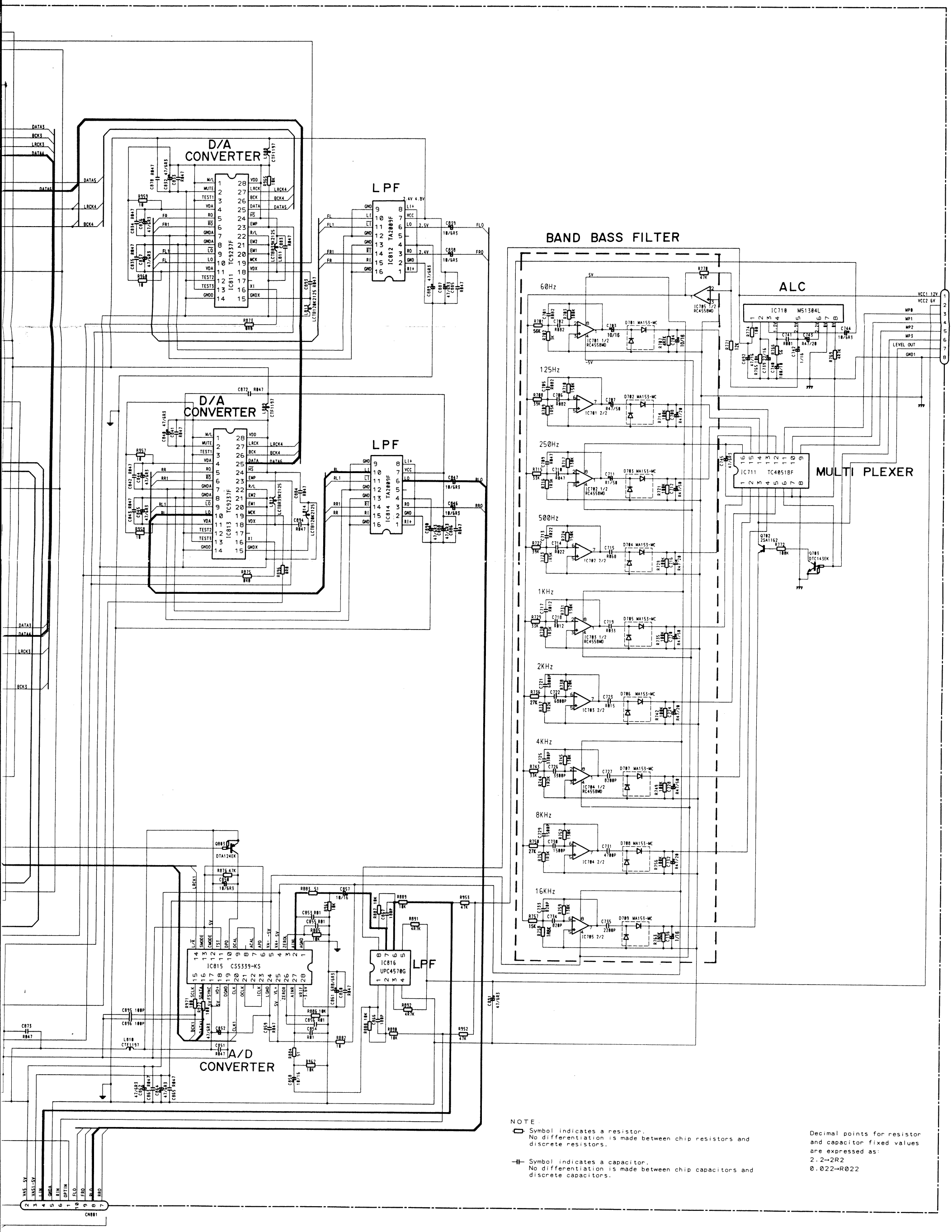

D/A CONVERTER
IC811 TC9237F
D/A CONVERTER
IC813 TC9237F
LPF
IC812 TA2009F
LPF
IC814 TA2009F
BAND BASS FILTER
60Hz
125Hz
250Hz
500Hz
1KHz
2KHz
4KHz
8KHz
16KHz
ALC
IC710 M51304L
MULTI PLEXER
IC711 TC4051BF
IC815 CS5339-KS
A/D CONVERTER
IC816 UPC4570G
LPF
TO AUDIO P.C.BOARD
CN701
CN801
NOTE
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 16

17. CONNECTION DIAGRAM(2)

- **DSP Unit (DEQ-7500/US, DEQ-7550/ES)**

IC808
IC812 IC814 IC816 IC813 IC815 Q802
IC, Q IC807 IC809 Q801 IC811 IC810 IC711 Q803 IC710 IC805 IC802

IC804
IC703 IC705 IC801
IC806 IC704 IC701 Q702
IC803 IC702 Q703

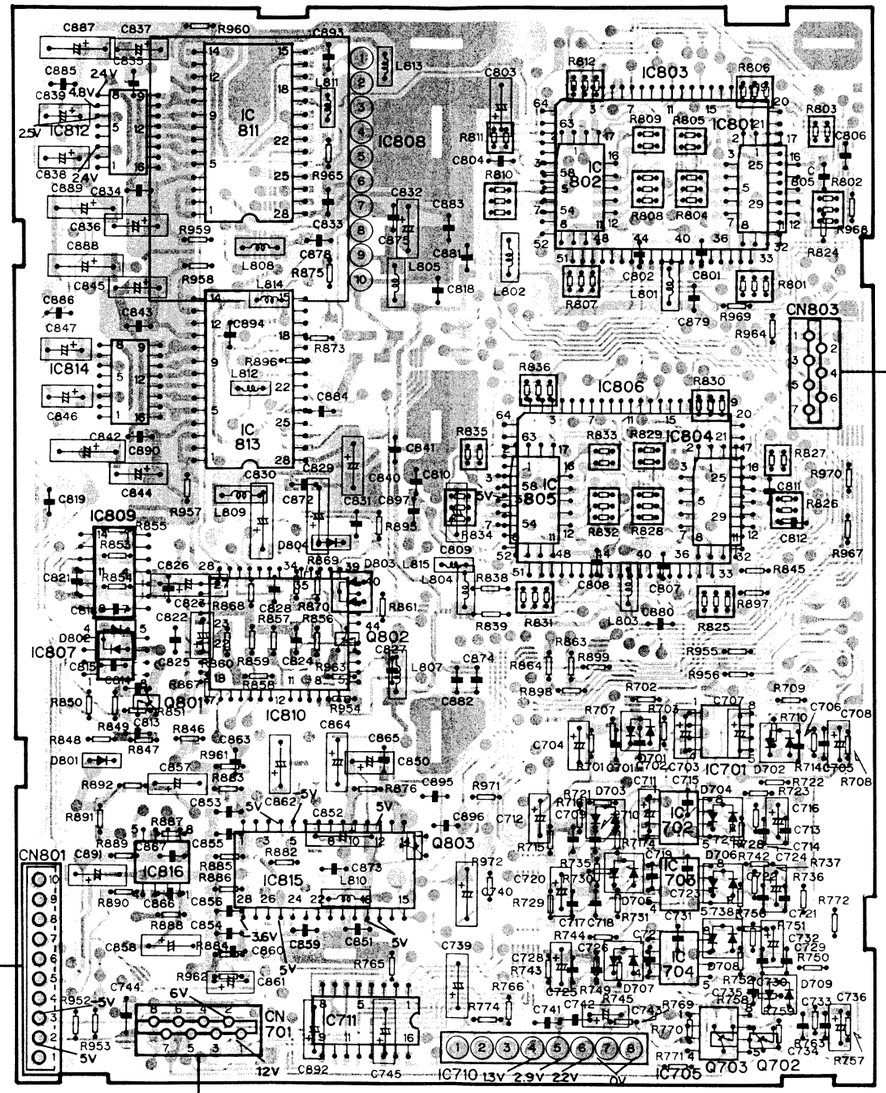


Fig. 17

18. CONNECTION DIAGRAM(3)

• DSP Unit (DEQ-7500/EW)

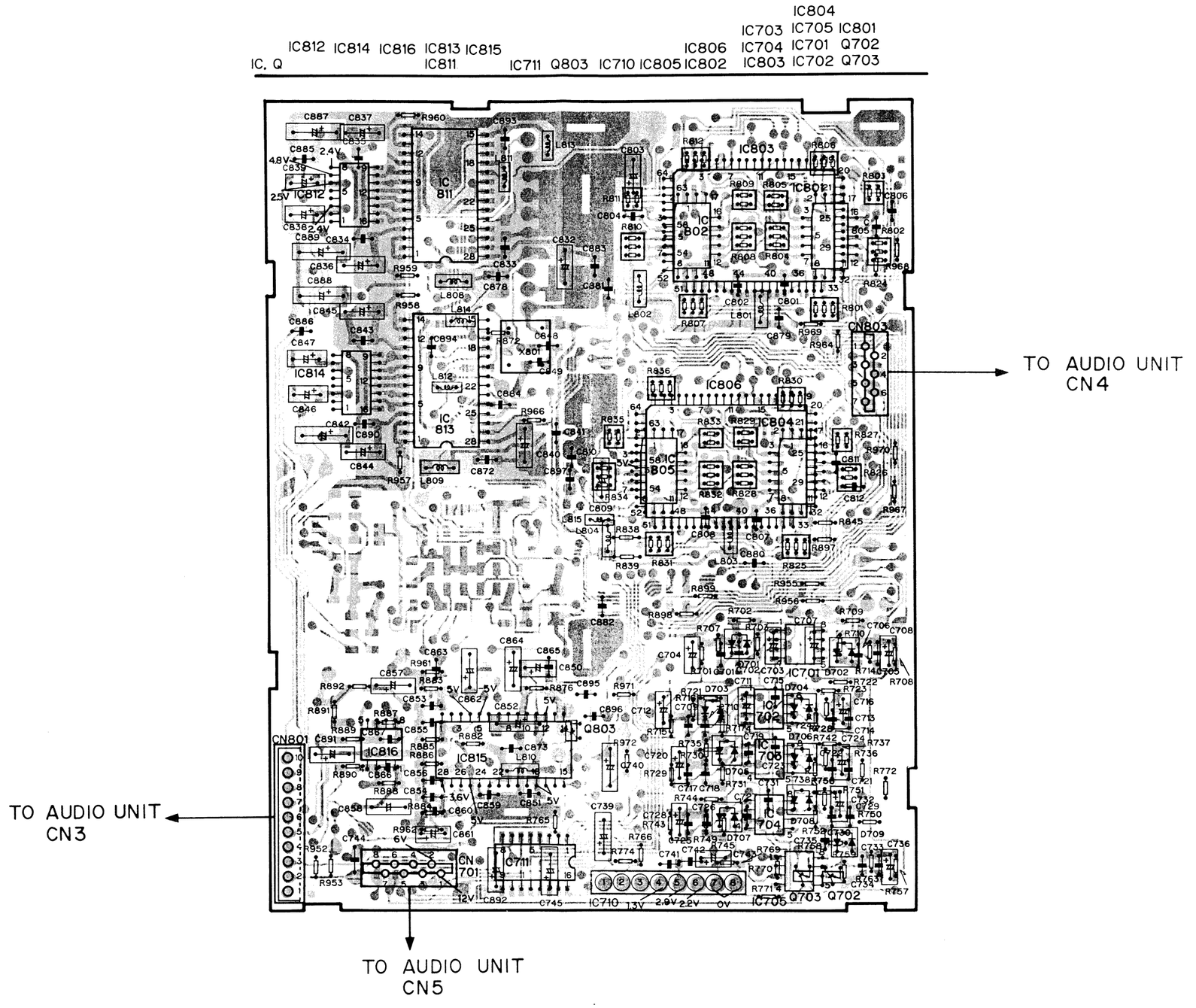
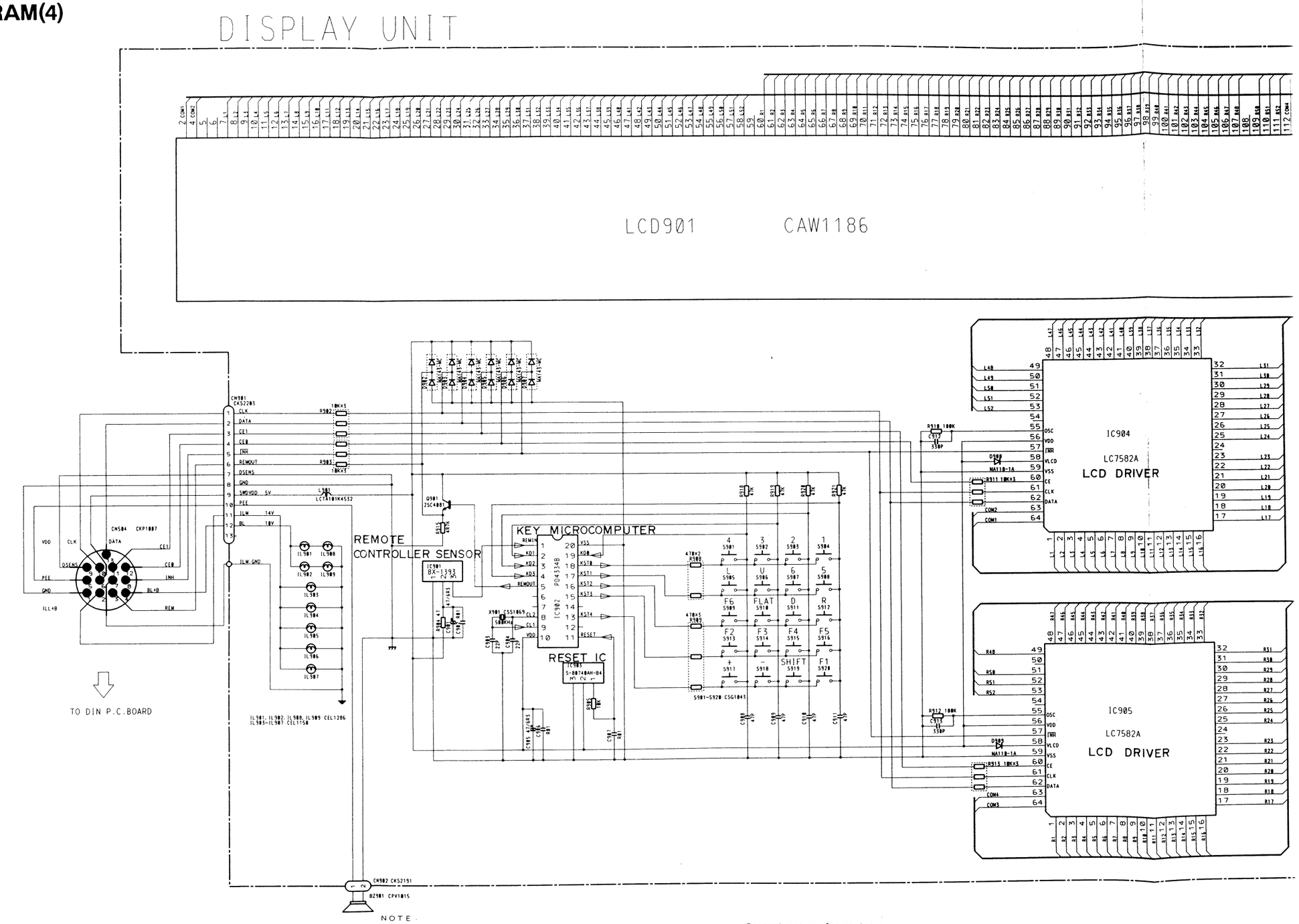


Fig. 18

20. SCHEMATIC CIRCUIT DIAGRAM(4)

- **Display Unit**



NOTE :

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

UNIT

LCD901 CAW1186

IC904
LC7582A
LCD DRIVER

IC905
LC7582A
LCD DRIVER

KEY MICROCOMPUTER
IC902 PD4334B

REMOTE CONTROLLER SENSOR
IC901 BX-1393

RESET IC
IC903 S-8874AH-B4

X901 CSS1069 500KHz

Q901 2SC4081

S901–S920 CSG1045

CN902 CKS2191

BZ901 CPV1015

NOTE:

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

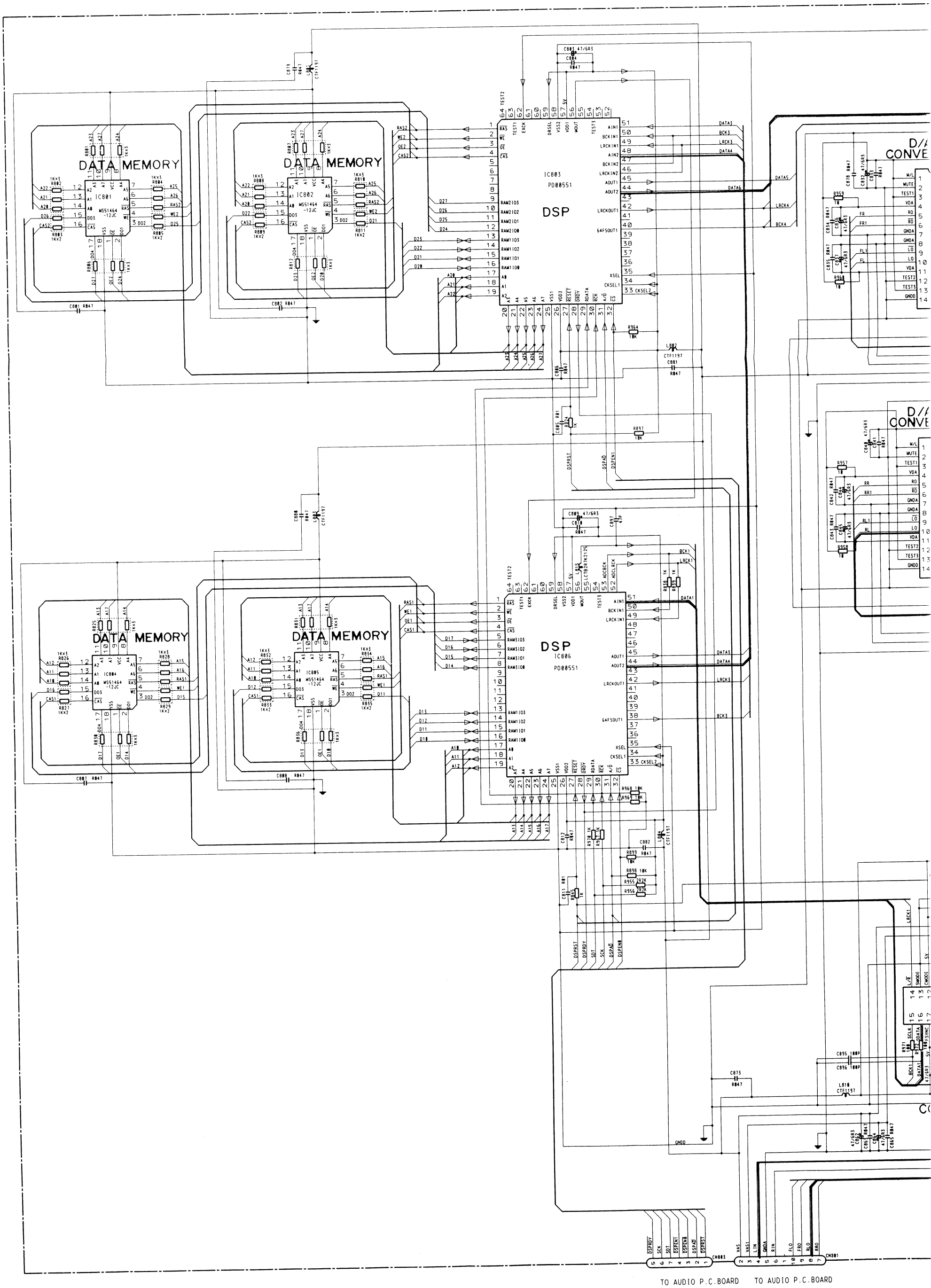
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

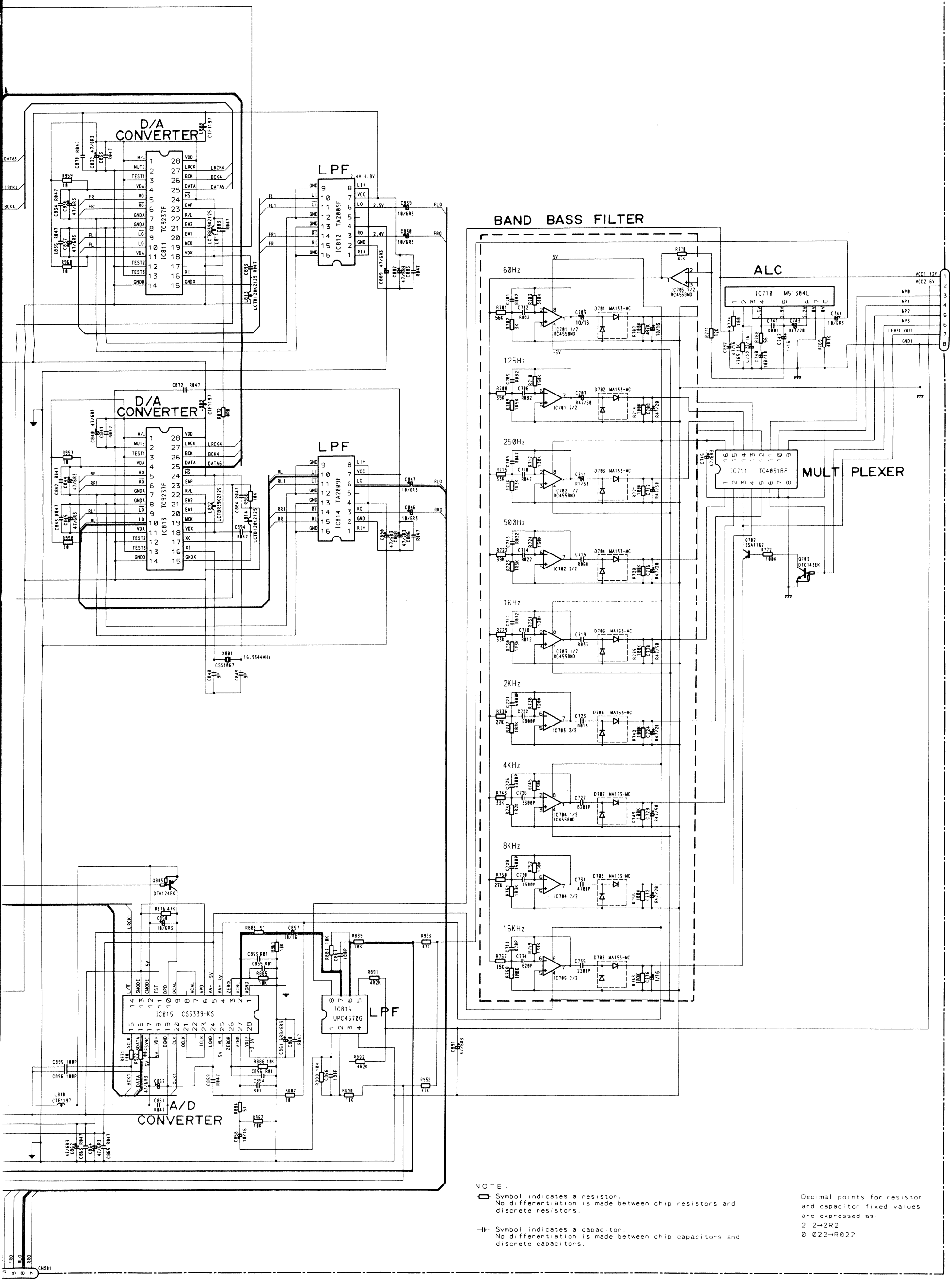
Fig. 20

. SCHEMATIC CIRCUIT DIAGRAM(3)

DSP Unit (DEQ-7500/EW)



DSP UNIT



NOTE :

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 19

21. CONNECTION DIAGRAM(4)

• **Display Unit**

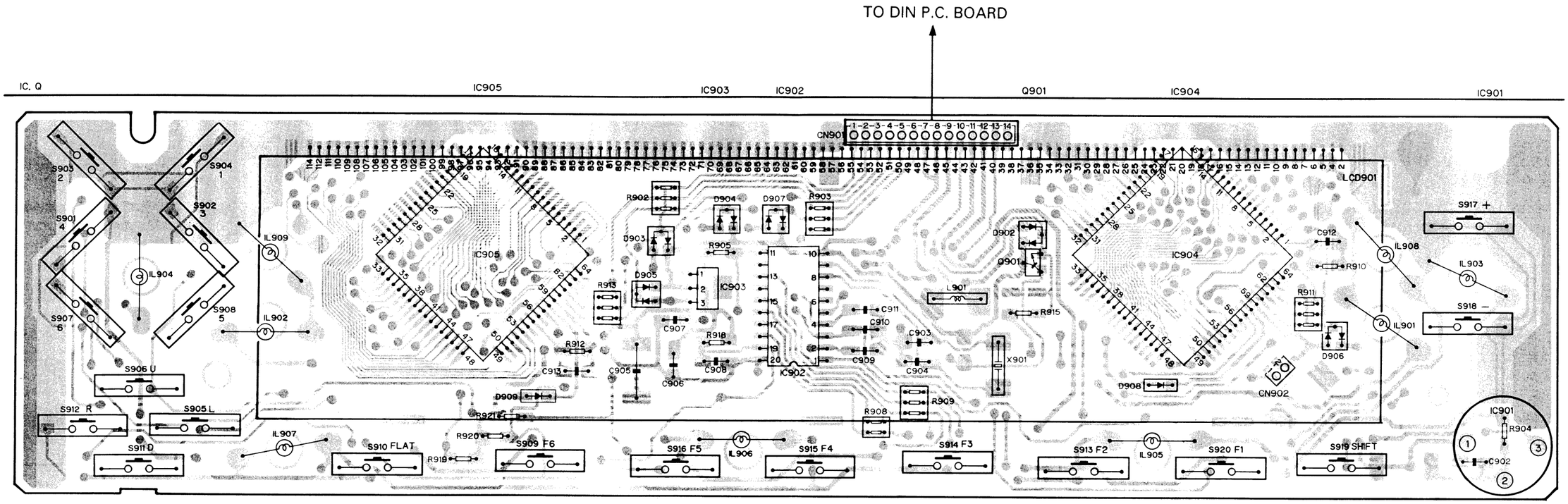


Fig. 21

22. EXPLODED VIEW

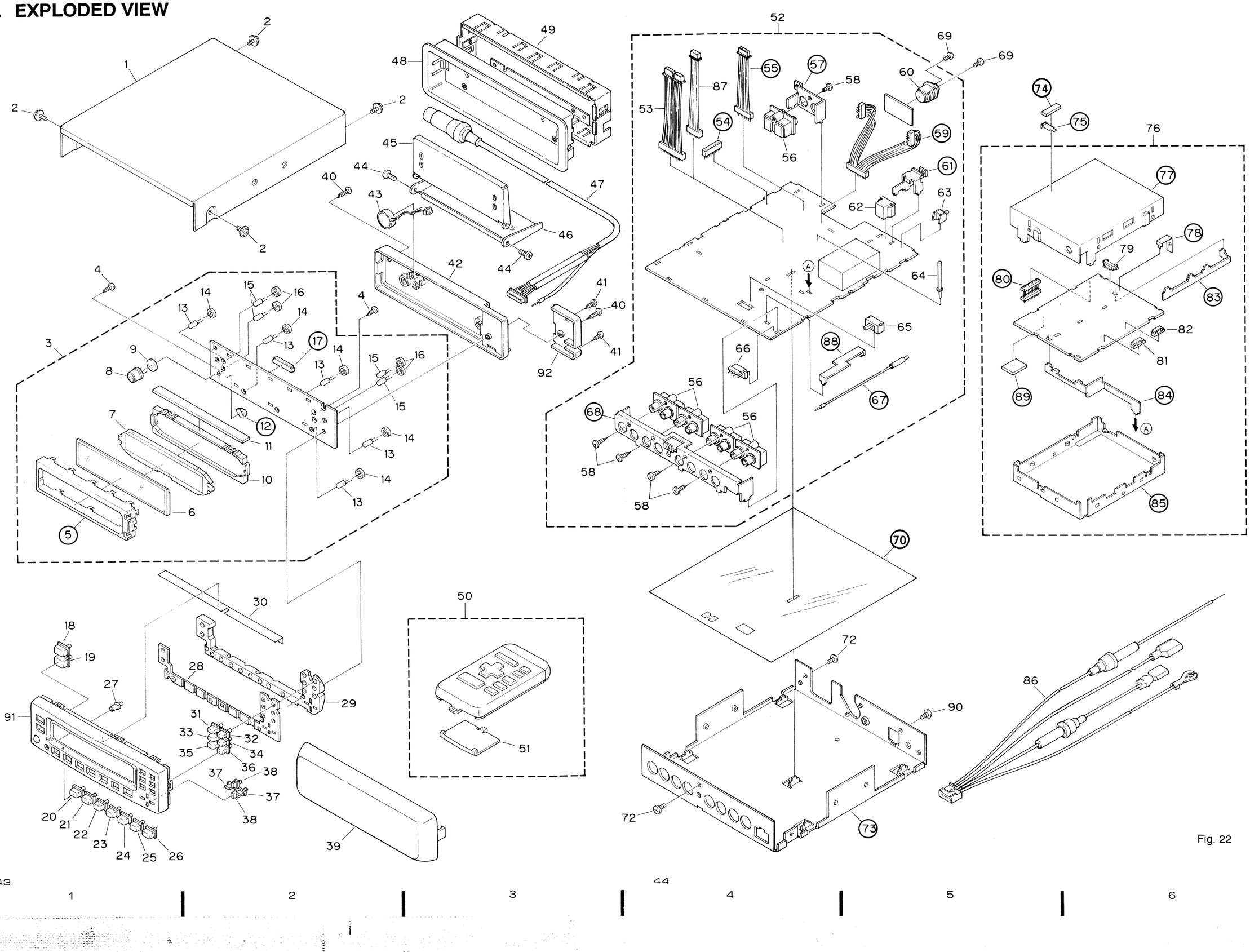


Fig. 22

• Parts List

NOTE:

- *The parts marked with "◉" may need long time to supply and their supply is subject to refuse as the case may be.*
- *Because the parts with encircled number shown on the dismantling drawing are not spare parts, we are unable to supply them in principle.*

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Case(US)	CNB1627		50	Remote Control Assy (US)	CXA4874
		Case(EW)	CNB1584			Remote Control Assy (EW, ES)	CXA4690
		Case(ES)	CNB1582				
	2	Screw	PMS30P050FZK		51	Battery Cover	CNS2432
◉	3	Display Unit	CWS1236	◉	52	Audio Assy(US, ES)	CWM3143
	4	Screw	BPZ20P060FMC			Audio Assy(EW)	CWM3141
	5	Holder	CNC4130				
	6	LCD	CAW1186		53	Cord(US, ES)	CDE367380FZK
	7	Lens	CNV3047		54	Connector	CKS2319
	8	IC(IC901)	BX-1393		55	Cord	CDE3685
	9	Spacer	CNV3064		56	Pin Jack	CKB1006
	10	Housing	CNV3048		57	Holder	CNC4139
	11	Connector	CNV3049		58	Screw	PPZ30P080FZK
	12	Connector	CKS2191		59	Cord	CDE3672
	13	Lamp	CEL1150		60	Socket	CKP1007
	14	Bush	CNV-724		61	Holder(US, ES)	CNC3316
	15	Lamp	CEL1286		62	Connector(US, ES)	CKS2014
	16	Bush	CNV2571		63	Switch	CSG1020
	17	Connector	CKS2203		64	Clamper	CEF100540FZK
	18	Button(+)	CAC2367		65	Switch	CSH1009
	19	Button(-)	CAC2368		66	Plug	CKS-461
	20	Button(F1)	CAC2371		67	Cord(EW)	CDE377550FZK
	21	Button(F2)	CAC2372		68	Holder	CNC4138
	22	Button(F3)	CAC2373		69	Screw	BMZ26P040FZK
	23	Button(F4)	CAC2374		70	Insulator	CNM3273
	24	Button(F5)	CAC3183		71	·····	
	25	Button(F6)	CAC3184		72	Screw	BMZ30P050FZK
	26	Button(FLAT)	CAC3185		73	Chassis	CNA1433
	27	Button	CAC3178		74	Spacer	CNM1429
	28	Cushion	CNM3269		75	Plate	CNC4425
	29	Lens	CNV3050	◉	76	DSP Unit(US, ES)	CWE1269
	30	Spacer	CNM3457			DSP Unit(EW)	CWE1268
	31	Button(1)	CAC3186		77	Shield	CNC4430
	32	Button(2)	CAC3187		78	Plate	CNC4426
	33	Button(3)	CAC3188		79	Connector	CKS2197
	34	Button(4)	CAC3189		80	Plug	CKS2816
	35	Button(5)	CAC3190		81	Connector	CKS2196
	36	Button(6)	CAC3191		82	Connector	CKS2195
	37	Button	CAC2379		83	Holder	CNC4143
	38	Button	CAC2380		84	Holder	CNC4142
	39	Panel(EW)	CNS2464		85	Shield	CNC4431
	40	Screw	CBA1211		86	Cord Assy(US, ES)	CDE3748
	41	Screw	BPZ20P050FZK			Cord Assy(EW)	CDE3749
	42	Cover	CNS2390		87	Cord(EW)	CDE3684
	43	Buzzer	CPV1015		88	Holder	CNC4144
	44	Screw	BMZ40P060FZK		89	Cushion	CNM3171
	45	Bracket	CNC4290		90	Screw(US, ES)	BMZ30P050FZK
	46	Bracket	CNC4291		91	Grille Unit(US)	CXA4827
	47	Cord Assy	CDE3686			Grille Unit(EW)	CXA4836

23. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/□S□□□J,RS1/□□S□□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

Unit Number :
Unit Name : DSP Unit(DEQ-7500/UC,DEQ-7550/ES)

MISCELLANEOUS

======Circuit Symbol & No. Part Name======	Part No.
IC 701 702 703 704 705	RC4558MD
IC 710	M51304L
IC 711	TC4051BF
IC 801 802 804 805	MS51464-12JC
IC 803 806	PD00551
IC 807	NJM3404AM
IC 808	V-16M934-D110
IC 809	MC74HCU04F
IC 810	PD0075
IC 811 813	TC9237F
IC 812 814	TA2009F
IC 815	CS5339-KS
IC 816	UPC4570G
Q 702	2SA1162
Q 703	DTC143EK
Q 801	2SC2712
Q 802	DTC144TK
Q 803	DTA124EK
D 701 702 703 704 705 706 707 708 709	MA153-MC
D 801 804	MA110-1A
D 802	MA153-MC
D 803	MA151WK-MT
L 801 802 803 804 Inductor	CTF1197
L 805 807 Inductor	CTF1197
L 808. 809 Inductor	CTF1197
L 810 Inductor	CTF1197
L 811 812 Inductor	LCTBR39K2125
L 813 Inductor	LCTB120K2125
L 814 Inductor	LCTB120K2125
L 815 Inductor	LCTB2R7K2125

RESISTORS

R 701	RS1/10S563J
R 702	RS1/10S302J
R 703	RS1/10S304J
R 707	RS1/10S472J
R 708	RS1/10S393J
R 709	RS1/10S152J
R 710	RS1/10S154J
R 714 721 728 735 742 749 756	RS1/10S104J
R 715 729 743	RS1/10S333J
R 716 730 751	RS1/10S132J
R 717 731 745 752 759	RS1/10S134J
R 722	RS1/10S393J
R 723	RS1/10S152J
R 724	RS1/10S154J
R 736 750	RS1/10S273J
R 737	RS1/10S122J
R 738	RS1/10S124J
R 744	RS1/10S122J
R 757	RS1/10S153J
R 758	RS1/10S182J
R 763	RS1/10S184J
R 765	RS1/10S103J
R 766	RS1/10S560J
R 769	RS1/10S472J
R 770	RS1/10S473J
R 771	RS1/10S123J
R 772	RS1/10S104J
R 774 972	RS1/10S101J
R 801 802 804 806 807 808 810 812 825 826	RA3C102J
R 803 805 809 811 827 829 833 835	RA2CQ102J
R 824 845	RS1/10S102J
R 828 830 831 832 834 836	RA3C102J
R 838 839	RS1/8S102J
R 846 847 850	RS1/10S102J
R 849	RS1/10S222J
R 851 853 854 954	RS1/10S103J
R 855	RS1/10S223J
R 856 857 858 869	RS1/10S102J
R 859	RS1/10S682J
R 860 870	RS1/10S470J
R 861	RS1/10S103J
R 863 864 963	RS1/10S472J
R 867 895	RS1/10S473J
R 868	RS1/10S392J
R 873 896	RS1/10S0R0J
R 875	RS1/10S0R0J
R 876	RS1/10S473J
R 882	RS1/10S100J
R 883 884	RS1/10S510J
R 885 886	RS1/10S103J
R 887 888	RS1/10S103J
R 889 890	RS1/10S103J
R 891 892	RS1/10S472J
R 897 898 899 964	RS1/10S103J
R 952 953	RS1/10S473J
R 955 956	RS1/10S222J
R 957 958 959 960	RS1/10S100J
R 961 962	RS1/10S103J
R 965	RS1/10S103J
R 967 970	RS1/10S102J
R 968 969	RS1/10S103J
R 971	RS1/10S101J

CAPACITORS

C 701 702 705 706	CKSYB823K50
C 703 704	CEV100M16
C 707 712 720 728	CEVR47M50
C 708 716 724 732	CSZSR47M20
C 709 710	CKSQYB473K50

======Circuit Symbol & No. Part Name======	Part No.
C 711	CEV0R1M50
C 713 714	CKSQYB223K50
C 715	CKSQYB683K25
C 717 718	CKSQYB123K50
C 719	CKSQYB333K50
C 721 722	CKSQYB682K50
C 723	CKSQYB153K50
C 725 726	CKSQYB332K50
C 727	CKSQYB822K50
C 729 730	CKSQYB152K50
C 731	CKSQYB472K50
C 733 734	CKSQYB821K50
C 735	CKSQYB222K50
C 736	CSZS010M16
C 739	CEV220M16
C 740	CEV101M10
C 741	CKSQYB102K50
C 742	CSZS010M16
C 743	CSZSR47M20
C 744	CSZSR100M6R3
C 745	CEV470M6R3
C 801 802 807 808 810 881 882	CKSQYB473K50
C 803 809	CEV470M6R3
C 804 806 812 879 880	CKSQYB473K50
C 805 811	CKSQYB103K50
C 813	CKSQYB103K50
C 814	CKSQYB221K50
C 815	CKSQYB102K50
C 816 821	CKSQYB222K50
C 818 827	CKSQYB473K50
C 819	CKSQYB103K50
C 822	CSZSR15M35
C 823 829 830	CSZST470M6R3
C 824 874 875	CKSQYB473K50
C 825 826	CCSQCH220J50
C 828	CCSQCH680J50
C 831	CKSQYB472K50
C 832 836 837 840 844 845	CEV470M6R3
C 833 834 841 842 843 872 878 883 886 893	CKSQYB473K50
C 835 884 885 894	CKSQYB473K50
C 838 839 846 847	CSZSR100M6R3
C 850	CSZSR100M6R3
C 851 859 873	CKSQYB473K50
C 852	CSZST470M6R3
C 853 854 855 856	CKSQYB103K50
C 857 858	CWV100M16
C 862 864 891	CEV470M6R3
C 860 863 865	CKSQYB473K50
C 861	CSZSR6R8M6R3
C 866 867	CCSQCH181J50
C 887 888 889 890	CSZST470M6R3
C 892	CEV470M16
C 895 896	CCSQCH101J50
C 897	CCSQCH470J50

Unit Number :
Unit Name : DSP Unit(DEQ-7500/EW)

MISCELLANEOUS

IC 701 702 703 704 705	RC4558MD
IC 710	M51304L
IC 711	TC4051BF
IC 801 802 804 805	MS51464-12JC
IC 803 806	PD00551
IC 811 813	TC9237F
IC 812 814	TA2009F
IC 815	CS5339-KS
IC 816	UPC4570G
Q 702	2SA1162

======Circuit Symbol & No. Part Name======	Part No.
Q 703	DTC143EK
Q 803	DTA124EK
D 701 702 703 704 705 706 707 708 709	MA153-MC
L 801 802 803 804 Inductor	CTF1197
L 808 809 Inductor	CTF1197
L 810 Inductor	CTF1197
L 811 812 Inductor	LCTBR39K2125
L 813 Inductor	LCTB120K2125
L 814 Inductor	LCTB120K2125
L 815 Inductor	LCTB2R7K2125
X 801 Crystal Resonator	CSS1067

RESISTORS

R 701	RS1/10S563J
R 702	RS1/10S302J
R 703	RS1/10S304J
R 707	RS1/10S472J
R 708	RS1/10S393J
R 709	RS1/10S152J
R 710	RS1/10S154J
R 714 721 728 735 742 749 756	RS1/10S104J
R 715 729 743	RS1/10S333J
R 716	RS1/10S132J
R 717 759	RS1/10S134J
R 722	RS1/10S393J
R 723	RS1/10S152J
R 724	RS1/10S154J
R 730 751	RS1/10S132J
R 731 745 752	RS1/10S134J
R 736 750	RS1/10S273J
R 737	RS1/10S122J
R 738	RS1/10S124J
R 744	RS1/10S122J
R 757	RS1/10S153J
R 758	RS1/10S182J
R 763	RS1/10S184J
R 765	RS1/10S103J
R 766	RS1/10S560J
R 769	RS1/10S472J
R 770	RS1/10S473J
R 771	RS1/10S123J
R 772	RS1/10S104J
R 774 972	RS1/10S101J
R 801 802 804 806 807	RA3010 2J
R 803 805 809 811	RA20Q102J
R 808 810 812 825 826	RA3010 2J
R 827 829 833 835	RA20Q102J
R 824 845	RS1/10S102J
R 828 830 831 832 834 836	RA3010 2J
R 838 839	RS1/10S102J
R 872	RS1/10S0R0J
R 876	RS1/10S473J
R 882	RS1/10S100J
R 883 884	RS1/10S510J
R 885 886	RS1/10S103J
R 887 888	RS1/10S103J
R 889 890	RS1/10S103J
R 891 892	RS1/10S472J
R 897 898 899 964	RS1/10S103J
R 952 953	RS1/10S473J
R 955 956	RS1/10S222J
R 957 958 959 960	RS1/10S100J
R 961 962	RS1/10S103J
R 966	RS1/10S103J
R 967 970	RS1/10S102J
R 968 969	RS1/10S103J
R 971	RS1/10S101J

======Circuit Symbol & No.	Part Name======	Part No.
CAPACITORS		
C 701 702 705 706		CKSYB823K50
C 703 704		CEV100M16
C 707 712 720 728		CEVR47M50
C 708 716 724 732 736		CSZSR47M20
C 709 710		CKSQYB473K50
C 711		CEV0R1M50
C 713 714		CKSQYB223K50
C 715		CKSQYB683K25
C 717 718		CKSQYB123K50
C 719		CKSQYB333K50
C 721 722		CKSQYB682K50
C 723		CKSQYB153K50
C 725 726		CKSQYB332K50
C 727		CKSQYB822K50
C 729 730		CKSQYB152K50
C 731		CKSQYB472K50
C 733 734		CKSQYB821K50
C 735		CKSQYB222K50
C 736		CSZS010M16
C 739		CEV220M16
C 740		CEV101M10
C 741		CKSQYB102K50
C 742		CSZS010M16
C 743		CSZSR47M20
C 744		CSZSR100M6R3
C 745		CEV470M6R3
C 801 802 807 808 810 881 882		CKSQYB473K50
C 803 809		CEV470M6R3
C 804 806 812 879 880		CKSQYB473K50
C 805 811		CKSQYB103K50
C 832 836 837 840 844 845		CEV470M6R3
C 833 834 841 842 843 872 878 883 886 893		CKSQYB473K50
C 835 884 885 894		CKSQYB473K50
C 838 839 846 847		CSZSR100M6R3
C 848 849		CCSQCH090D50
C 850		CSZSR100M6R3
C 851 859 873		CKSQYB473K50
C 852		CSZST470M6R3
C 853 854 855 856		CKSQYB103K50
C 857 858		CEA100M16
C 860 863 865		CKSQYB473K50
C 861		CSZSR6R8M6R3
C 862 864 891		CEV470M6R3
C 866 867		CCSQCH181J50
C 887 888 889 890		CSZST470M6R3
C 892		CEV470M16
C 895 896		CCSQCH101J50
C 897		CCSQCH470J50

Unit Number :
Unit Name : Audio P.C.Board

MISCELLANEOUS

IC 1		CWV1030
IC 3 5 6 51 151 251 253 351		UPC4570G
IC 52 53 55 56 152 153 155 156		M5238FP
IC 54 154		TC9233F
IC 57 157		RC2068MD1
IC 252 352		MC14052BF
IC 451		KHAA07
IC 453		NJM78L12UA
IC 551		PD4374C
IC 552		PD3211B

======Circuit Symbol & No.	Part Name======	Part No.
IC 553		S-80734AN-DY
Q 1 51 52 53 54 151 152 153 154 505		2SC2712
Q 55 56 155 156 452 453 455 457		2SC2712
Q 59 61 159 161		DTC343TK
Q 60 62 160 162 251 252 351 352		DTC343TK
Q 63 163 501		DTA114EK
Q 253 353		DTA114EK
Q 451 458		2SD1864
Q 454 503		2SB1278
Q 456		2SB1434
Q 502		DTC114EK
Q 504		2SC2712
Q 509		2SD2037
Q 513 553 554 555 556		2SA1162
Q 514 515		IMX3
Q 551		2SA1162
Q 552		2SC2712
Q 557(US,ES)		DTA114TK
D 1 3		MA151WK-MT
D 2		MA8068L
D 51 52 151 152		MA153-MC
D 55 155 252 352 552 553		MA110-1A
D 451 452 457 458		ERA15-02VH
D 453		MA8056M
D 454		MA3075H
D 455		MA3068M
D 460		MA8091L
D 501		MA8110M
D 551		MA153-MC
D 554 555(US,ES)		MA151WK-MT
D 556 (EW)		MA110-1A
L 1 2	Ferri-Inductor	CTF1007
L 451		CTH1078
L 454	Coil	CTF1135
L 455 551		LCYA100K3225
X 551	Crystal Resonator	CSS1071
SW 51	Switch	CSH1009
SW501	Switch	CSG1020
EF 451 452	EMIFilter	CCG1006

RESISTORS

R 1 2 111 112 113 114 211 212 213 214	RS1/10S471J
R 11 12 26 36 38 453 455 457 459 503	RS1/10S473J
R 13 14	RS1/10S912J
R 15 16 75 76 81 82 87 88 175 176	RS1/10S333J
R 23 34 62 66 166	RS1/10S102J
R 25 35 51 52 93 103 151 152 193 253	RS1/10S104J
R 27 29 37 39	RS1/10S753J
R 28 572 577 595 620 623	RS1/10S473J
R 30 31 61 65 94 161 162 165 194 254	RS1/10S102J
R 32 59 60 95 159 160 195 251 252 452	RS1/10S472J
R 33 53 54 57 58 92 122 153 154 157	RS1/10S103J
R 40 104 203 204 594 596	RS1/10S104J
R 69 169 70 170	RS1/10S222J
R 71 72 118 171 172 218 263	RS1/10S222J
R 73 74 85 86 173 174 185 186	RS1/10S331J
R 77 78 89 90 177 178 183 184 189 190	RS1/10S332J
R 79 80 179 180	RS1/10S391J
R 83 84	RS1/10S332J
R 91 191	RS1/10S474J
R 96 196	RS1/10S105J
R 97 98 197 198 351 352 353 354 561 562	RS1/10S472J
R 101 102 105 106 201 202 205 206 266	RS1/10S153J
R 119 120 219 220	RS1/10S303J
R 121 221 361 366 518 565 566 567 568 625	RS1/10S103J
R 123 223	RS1/10S203J

======Circuit Symbol & No. Part Name======	Part No.
R 124 224	RS1/10S203J
R 125 126 225 226	RS1/10S104J
R 158 192 222 360 456 462	RS1/10S103J
R 181 182 187 188 269	RS1/10S333J
R 255	RS1/10S392J
R 256 257 355 358 359 529 532 535 538 587	RS1/10S104J
R 260 261 369 370 463 464	RS1/10S471J
R 262 371	RS1/10S223J
R 264	RS1/10S751J
R 265 267	RS1/10S202J
R 268	RS1/10S392J
R 356 501 528 531 534 537 552 553 554 555	RS1/10S102J
R 357	RS1/10S153J
R 362	RS1/10S153J
R 363 367	RS1/10S153J
R 364 365 368	RS1/10S243J
R 372	RS1/10S104J
R 451	RS1/4S220J
R 454 506 556 557 558 559	RS1/10S472J
R 458	RS1/2S681J
R 460 512	RS1/4S122J
R 465	RS1/10S100J
R 466 467 507 585	RS1/10S103J
R 502	RS1/10S182J
R 504	RS1/2S561J
R 505 621	RS1/10S103J
R 517 570 603	RS1/10S473J
R 519 520 521 522 523	RS1/8S561J
R 524 525	RS1/8S103J
R 530 533 536 539	RS1/10S561J
R 551	RS1/10S154J
R 560 571	RS1/10S224J
R 563 564	RS1/10S472J
R 576 604	RS1/10S102J
R 588 589 590 591 593 599 600 601 602	RS1/10S104J
R 597 598(US,ES)	RS1/10S104J
R 605(EW)	
R 606 607 608 609 610 611 612 613	RS1/10S104J
R 614 615 616 617 622	RS1/10S104J
R 618 619(EW)	RS1/10S103J
R 624	RS1/10S272J
R 630(US,ES)	RD1/4PS104JL

CAPACITORS

C 1 2 185 262 361 470 471	CKSQYB102K50
C 3 4	CEAS010M50
C 11 12 22 88 188 263 362	CEA4R7M35LS
C 15 16 53 54 95 153 154 195 252 352	CCSQCH100D50
C 17	CEAS221M10
C 21 25 26 27 83 84 93 94 183 184	CEA100M16LS2
C 23 24 81 82 181 182	CEA470M10LS
C 55 56 155 156 251 253 254 261 351 353	CEALNP100M16
C 59 60 159 160	CEALNP4R7M35
C 63 64 163 164	CEALNP2R2M35
C 65 66 165 166	CEALNPR33M50
C 67 68 167 168	CEALNPR68M50
C 69 70 169 170	CKSQYB333K25
C 71 72 171 172	CKSQYB103K25
C 73 74 173 174	CKSQYB561K50
C 75 76 175 176	CCSQCH330J50
C 77 177	CKSQYB393K25
C 78 178	CCSQCH101J50
C 79 80 179 180	CEA010M50LS2
C 85 86 186	CKSQYB102K50

======Circuit Symbol & No. Part Name======	Part No.
C 89 90 189 190	CFTNA104J50
C 91 191	CEA102M10L2
C 96 196	CCSQCH100D50
C 97 98 197 452 455 461 554 555	CKSQYB473K25
C 193 194	CEA100M16LS2
C 198 472	CKSQYB473K25
C 255 256	CKSQYB223K25
C 354	CEALNP100M16
C 355 356 357	CFTNA184J50
C 358	CFTNA474J50
C 359	CKSQYB273K25
C 360	CEALNP220M16
C 451 6800 μ/16V	CCH1132
C 453	CEAS471M16
C 454 456 501 502	CEAS470M10
C 464	CEAS101M16
C 467 0.47 μ/5.5V	CCL1016
C 468 469	CEAS470M16
C 553	CSZS010M16
C 556	CEA2R2M50LS2
C 601(US,ES)	CEAS330M16
C 602 603(US,ES)	CKSQYB473K25

Unit Number :
Unit Name : Display Unit

MISCELLANEOUS

IC 901	BX-1393
IC 902	PD4334B
IC 903	S-8074OAH-B4
IC 904 905	LC7582A
Q 901	2SC4081
D 902 903 904 905 906 907	MA143-MC
D 908 909	MA110-1A
L 901 Inductor	LCTA101K4532
X 901 CeramicResonator	CSS1069
S 901 902 903 904 905 Switch	CSG1043
S 906 907 908 909 910 Switch	CSG1043
S 911 912 913 914 915 Switch	CSG1043
S 916 917 918 919 920 Switch	CSG1043
IL 901 902 908 909 Lamp	CEL1286
IL 903 904 905 906 907 Lamp	CEL1150
BZ 901 Buzzer	CPV1015
LCD901 LCD	CAW1186

RESISTORS

R 902 903 911 913	RA30103J
R 904	RS1/10S470J
R 905	RS1/10S103J
R 908	RA20Q471J
R 909	RA30471J
R 910 912	RS1/10S104J
R 915	RS1/10S472J
R 918	RS1/10S473J
R 919 920 921	RS1/10S473J

CAPACITORS

C 901 905	CSZS470M6R3
C 902 906 907	CKSQYB103K50
C 903 904	CCSQCH221J50
C 908 909 910 911	CKSQYB471K50
C 912 913	CCSQCH331J50

24. PACKING METHOD

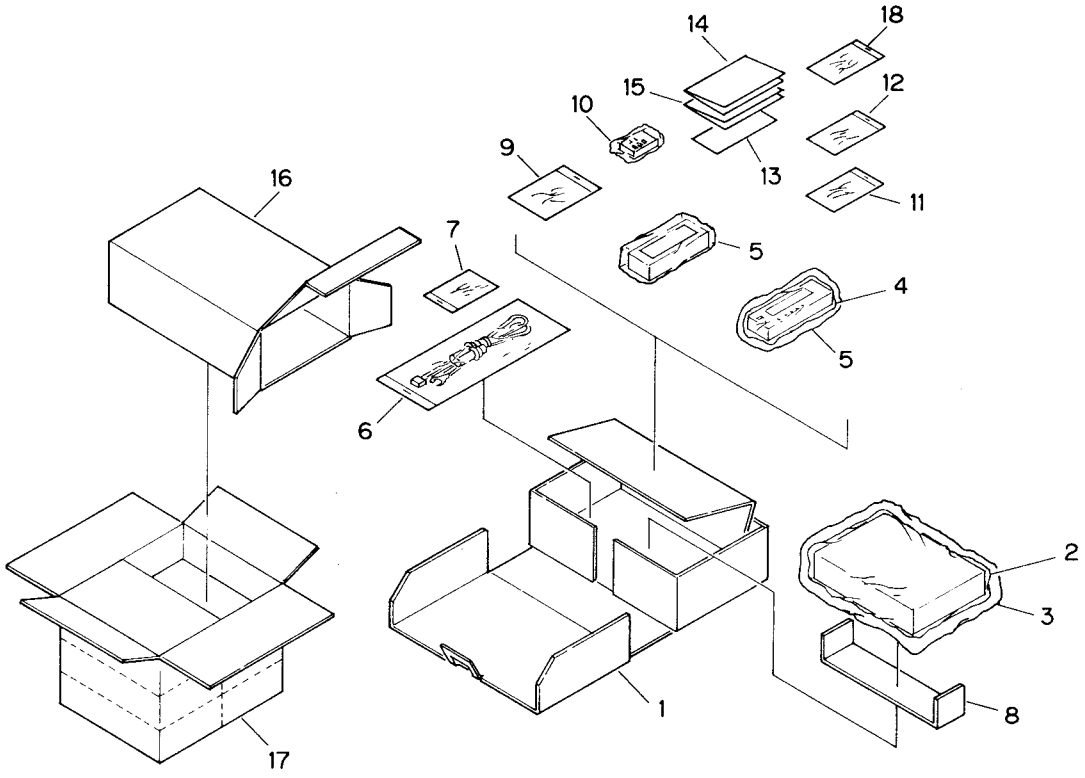


Fig. 23

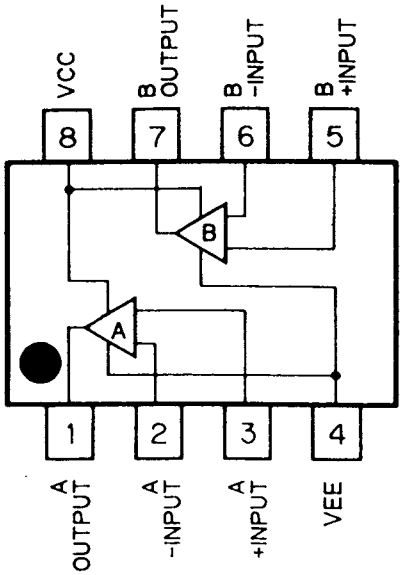
Mark No.	Description	Part No.
1	Carton	CHG2217
2	Cover	CHG1086
3	Air Cushioned Bag	CEG1117
4	Cover	CHG1064
5	Air Cushioned Bag	CEG1118
6	Cord Assy(US, ES)	CDE3748
	Cord Assy(EW)	CDE3749
* 7	Accessory Assy	CEA-782
7-1	Screw(×4)	BNC50P160FMC
7-2	Split Pin(×4)	B20-223
7-3	Screw(×5)	CBA-101
7-4	Screw(×4)	CBA-102
7-5	Cord	CDE1289
* 7-6	Polyethylene Bag	E36-613
7-7	Nut(×4)	NF50FMC
7-8	Washer(×4)	WA45F130M080
* 8	Mounting Bracket	CNB-720
9	Air Cushioned Bag	CEG1052
9-1	Bracket	CNC4290
9-2	Bracket	CNC4291
9-3	Fastener(×2) (Rough)	CNM1716
9-4	Fastener(×2) (Soft)	CNM1717
9-5	Fastener(×2)	CNM-667
10	Remote Control Assy (US)	CXA4874
	Remote Control Assy (EW, ES)	CXA4690

Mark No.	Description	Part No.
11	Accessory Assy	CEA1473
* 11-1	Polyethylene Bag	CEG-127
* 11-2	Battery	CEX1006
11-3	Fastener(Rough)	CNM3249
11-4	Fastener(Soft)	CNM3250
12	Accessory Assy (US, ES)	CEA1718
12-1	Screw(×4)	BMZ26P040FZK
12-2	Screw(×2)	BMZ30P060FZK
12-3	Screw(×2)	BMZ40P060FZK
12-4	Screw(×2)	RCW41P160FZK
12-5	Spring	CBH-865
* 12-6	Polyethylene Bag	CEG-127
* 13	Card(US, ES)	ARY1048
*	Card(EW)	ARY-062
14	Owner's Manual (US)	CRB1248
	Owner's Manual (EW)	CRD1593
	Owner's Manual (ES)	CRD1594
15	Owner's Manual (EW)	CRD1603
16	Carton (US)	CHG2220
	Carton (EW)	CHG2218
	Carton (ES)	CHG2219
17	Contain Box (US)	CHL2220
18	Screw Assy (EW)	CEA1717
18-1	Screw(×2)	BMZ30P060FZK
18-2	Screw(×2)	BMZ40P060FZK
18-3	Screw(×2)	RCW41P160FZK

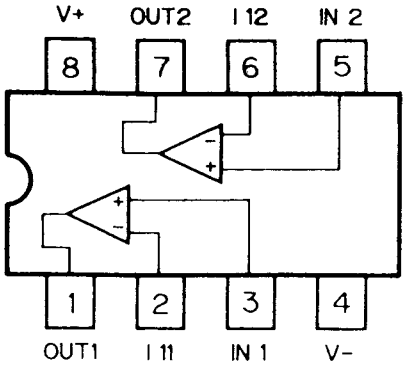
Part No.	Language
CRB1248	English
CRD1593	English, French, German, Spanish
CRD1594	English, French, Spanish, Arabic
CRD1603	Swedish, Norwegian, Italian, Finnish, Dutch

• ICs

UPC4570G, M5238FP



RC2068MD1, RC4558MD



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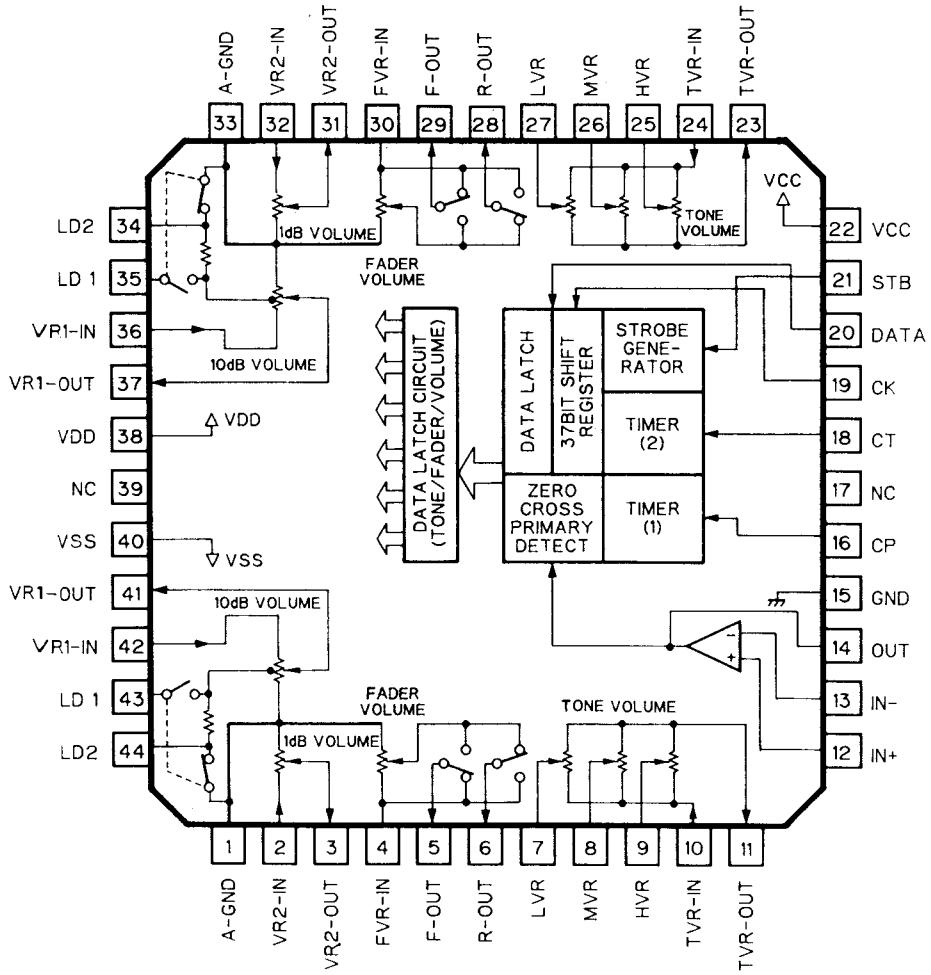
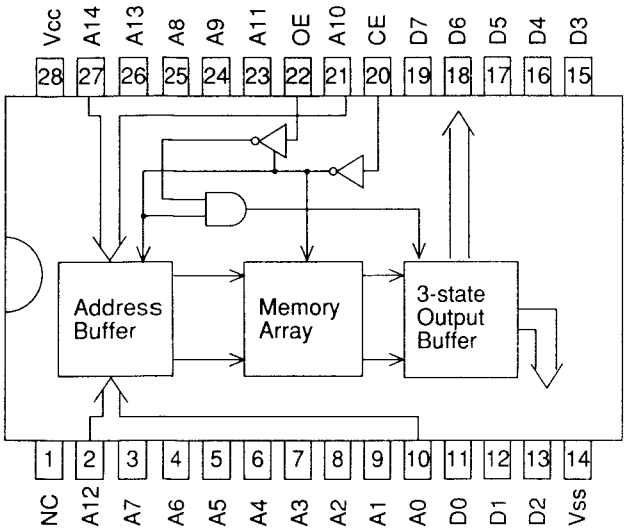
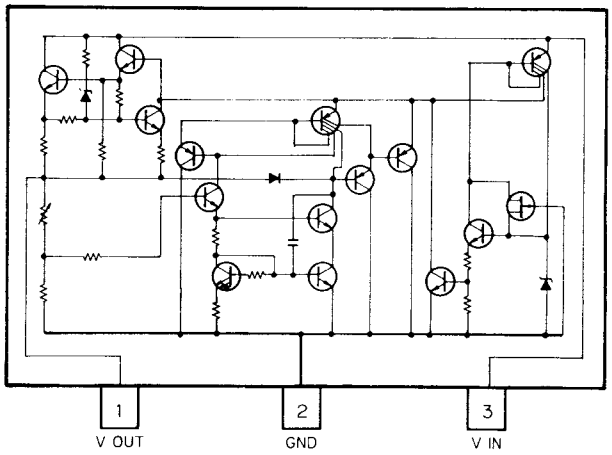


*PD3211B

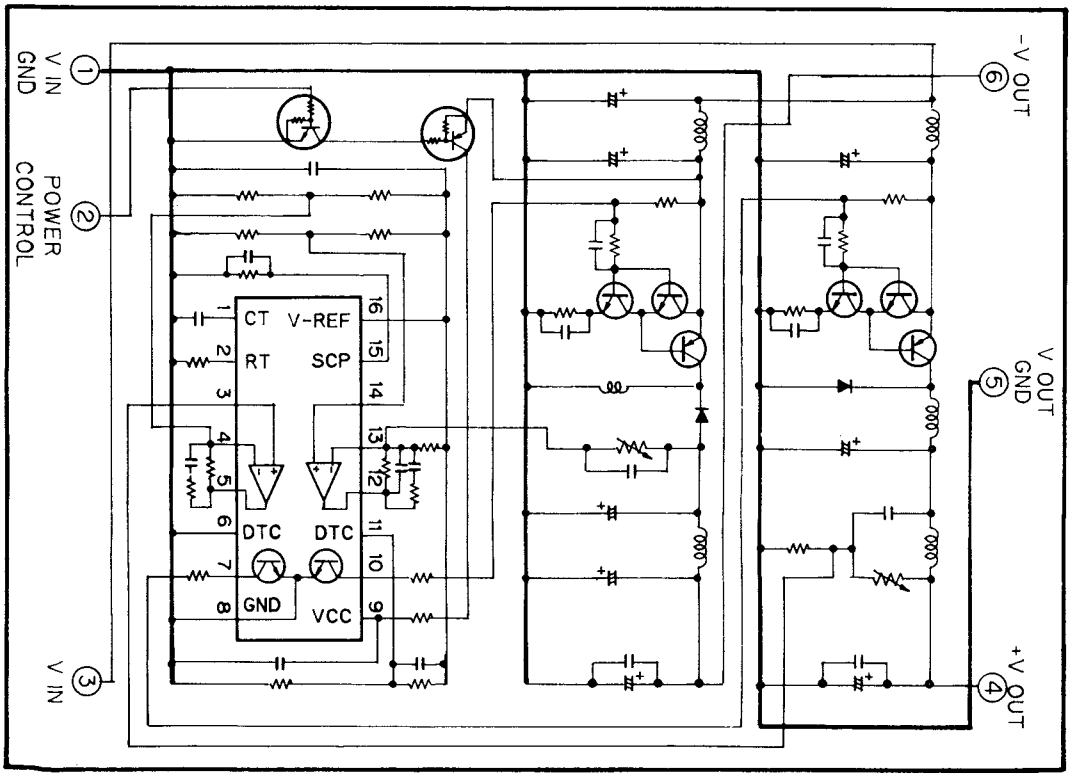
*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.



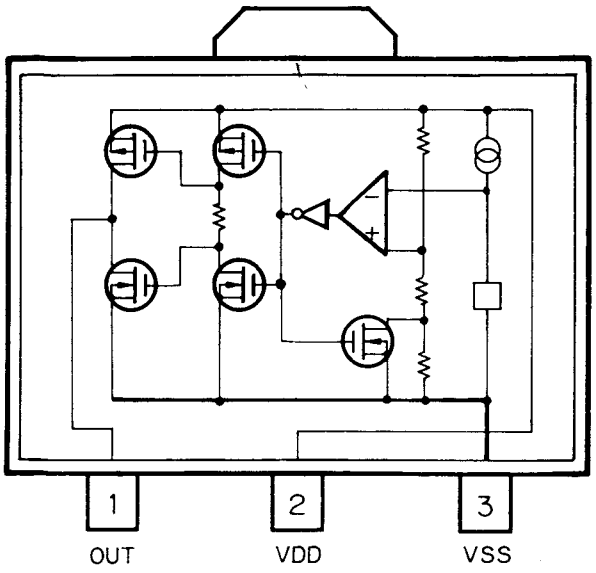
NJM78L12UA



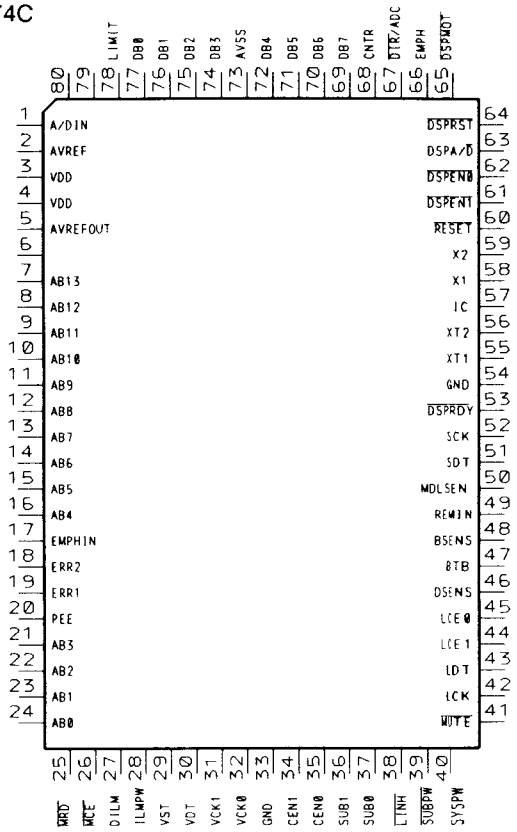
KHAA07



S-80734AN-DY,
S-80740AH-B4



*PD4374C



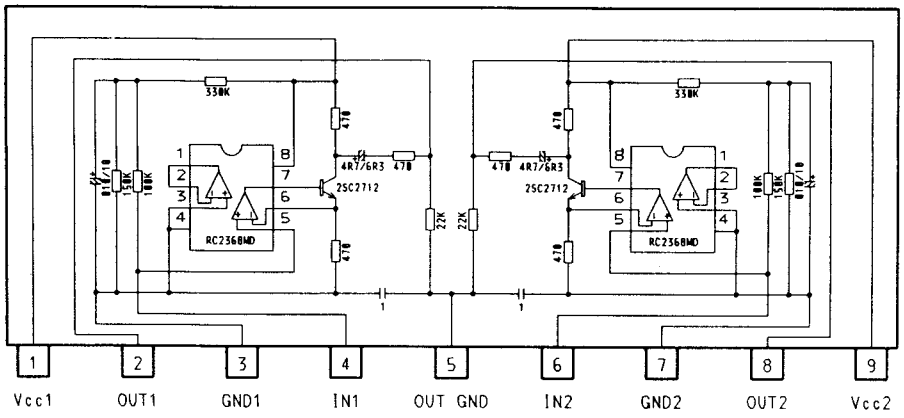
• Pin Functions (PD4374C)

Pin	Pin name	I/O	Output Format	Function
1	A/DIN	A/D		A/D Converter input pin
2	AVREF			A/D conveter reference voltage
3 4	VDD			Poewr supply
5	AVREFOUT	output	C	A/D conveter reference voltage output
6	NC	output	C	Not used
7 | 16	AB13 | AB4	output	C	Memory address output
17	EMPHIN	input		Emphasis input
18	ERR2	input		Error 2 input
19	ERR1	input		Error 1 input
20	PEE	output	C	Beep tone output
21 | 24	AB3 | AB0	output	C	Memory address output, A/D switching output
25	$\overline{RRD}$	output	C	Memory read strobe output
26	$\overline{RCE}$	output	C	Memory chip select output
27	DILM	output	C	Dial illumination sellector output
28	ILMPW	output	C	Illiumination power control output
29	VST	output	N1	E-VOL strobe
30	VDT	output	N1	E-VOL date
31	VCK1	output	N1	E-VOL clock (Rear)
32	VCK0	output	N1	E-VOL clock (Front)
33	GND			GND
34	CEN1	output	C	Center speaker fc control
35	CEN0	output	C	Center speaker fc control

Pin	Pin name	I/O	Output Format	Function
36	SUB1	output	C	Sub woofer fc control
37	SUB0	output	C	Sub woofer fc control
38	$\overline{LINH}$	output	C	LCD control inbit output
39	$\overline{SUBPW}$	output	C	Control output for grille power supply
40	SYSPW	output	C	System power supply control
41	$\overline{MUTE}$	output	C	Mute outpit
42	LCK	output	NM	LCD driver clock output
43	LDT	output	NM	LCD driver dete output
44	LCE1	output	NM	LCD control chip select output
45	LCE0	output	NM	LCD control chip select output
46	DSENS	input		Grille,connector remove/replace sensor input
47	BTB	input		BTB input
48	BSENS	input		Back up power sense
49	REMIN	input		Remote control input
50	MDLSEN	input		Destination selection input
51	SDT	output	N	DSP serial dste
52	SCK	output	N	DSP serial clock
53	$\overline{DSPRDY}$	input		DSP ready input
54	GND			GND
55	XT1			Connector to ground
56	XT2			Open
57	IC			Connector to ground
58 59	X1 X0			Crystal oscillating element connection pin
60	$\overline{RESET}$			Reset input
61	$\overline{DSPEN1}$	output	NM	DSP chip enable output
62	$\overline{DSPEN0}$	output	NM	DSP chip enable ourput
63	DSPA/$\overline{D}$	output	NM	DSP address/date switching output
64	$\overline{DSPRST}$	output	NM	DSP reset output
65	$\overline{DSPMOT}$	output	NM	DSP mute output
66	EMPH	output	NM	Emphasis output
67	$\overline{DTR}$/ADC	output	NM	DIR/ADC switching output
68	CNTR	output	NM	DIR count clock
69 | 72	DB7 | DB4	input		Memory date input
73	AVSS			Ground voltage of A/D convertor
74 | 77	DB3 | DB0	input		Memory date input
78	LIMIT	A/D		Audio signal, Over input detector
79 80	NC	A/D		Not used

Output Format	Meaning
C	C-MOS
N	N channel open drain
NM	Middle resistivity N channel open drain

CWV1030



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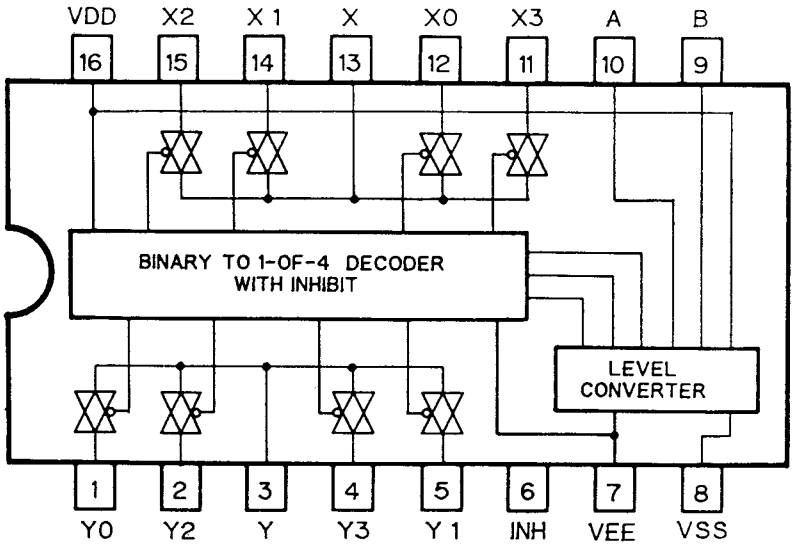

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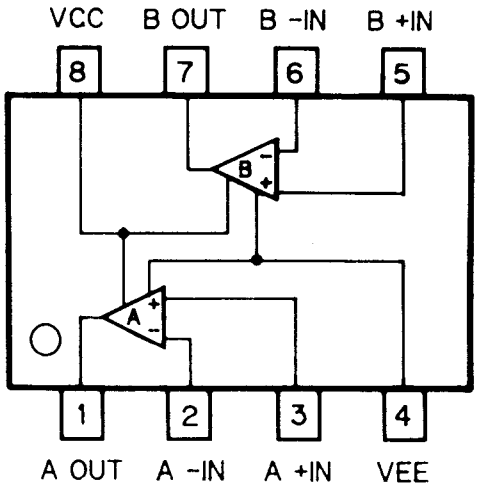

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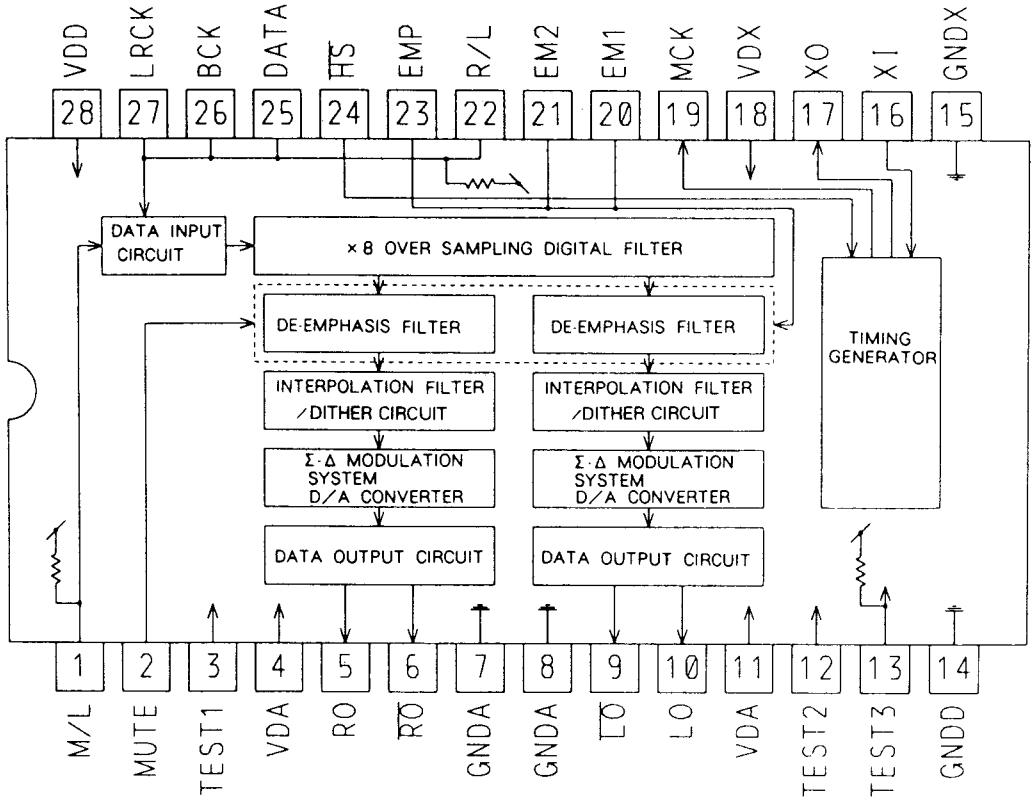

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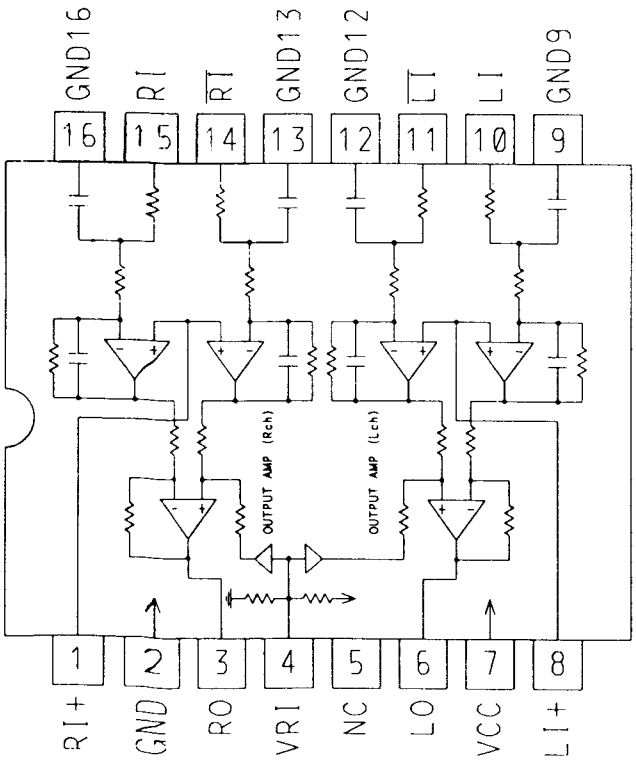

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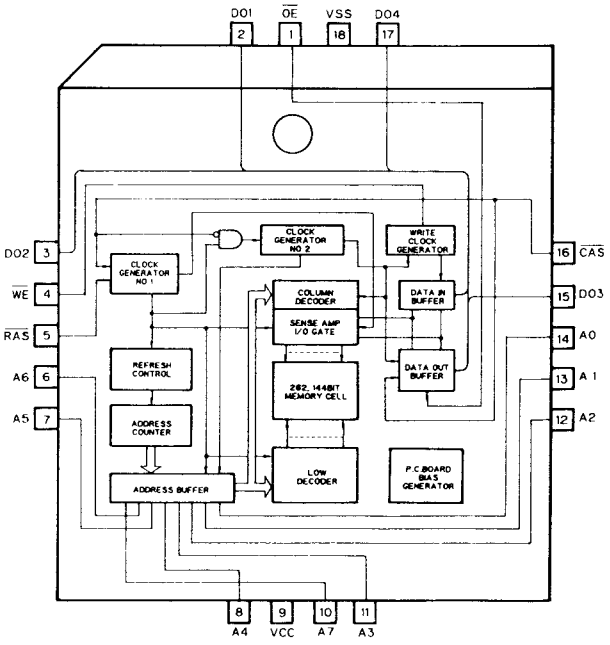

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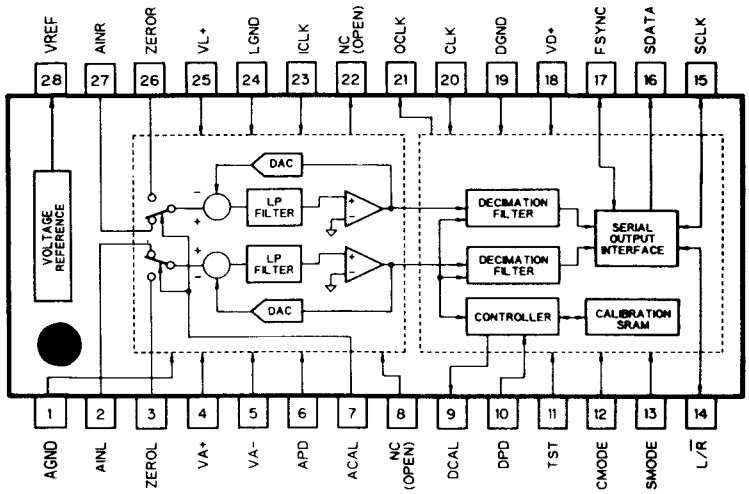

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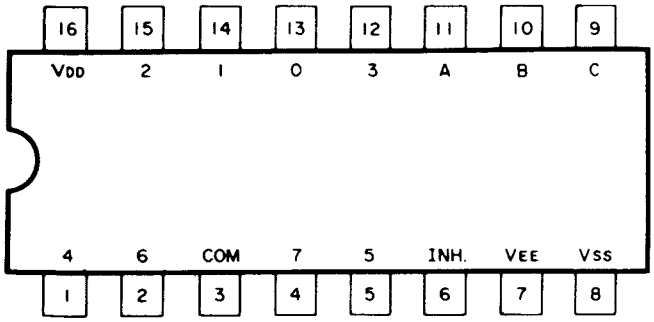
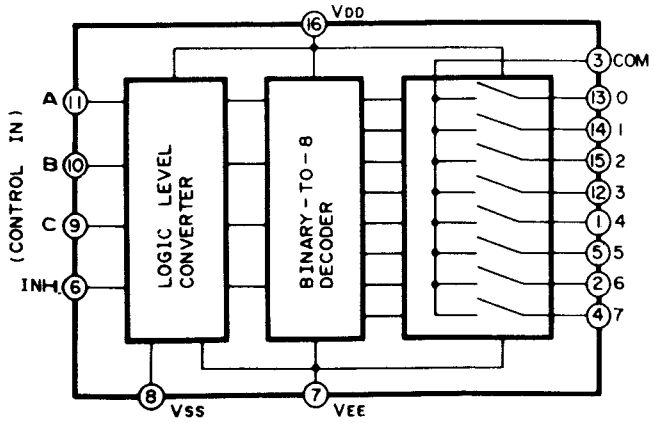
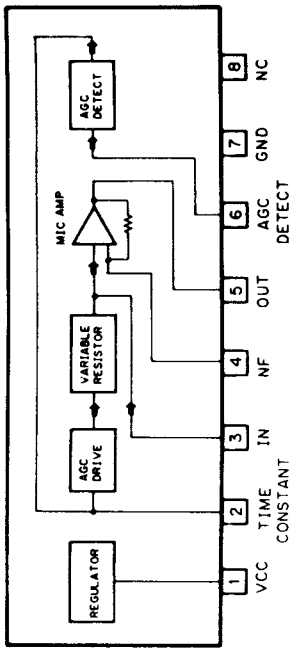


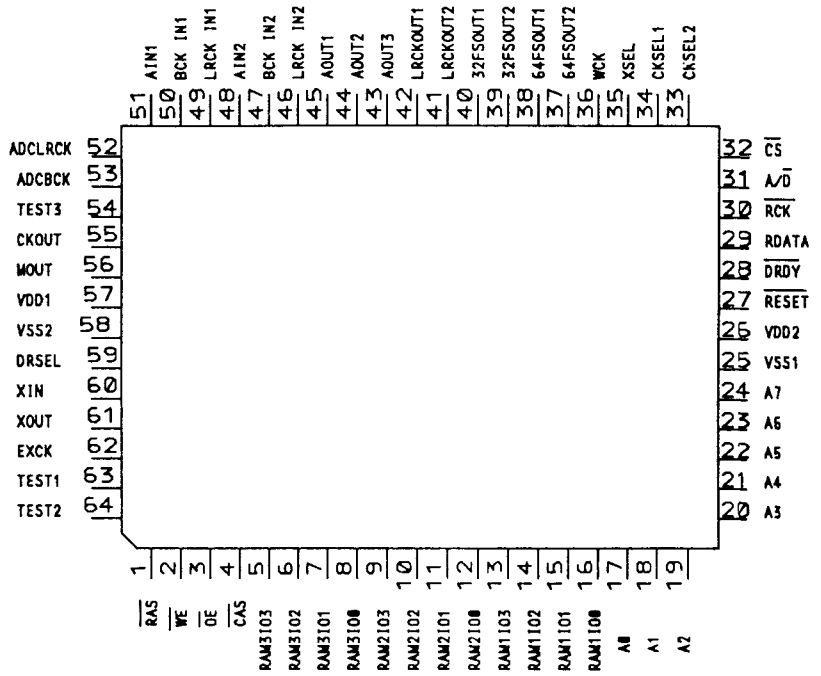


Control input				CH.
INH.	C	B	A	
L	L	L	L	0
L	L	L	H	1
L	L	H	L	2
L	L	H	H	3
L	H	L	L	4
L	H	L	H	5
L	H	H	L	6
L	H	H	H	7

M51304L



*PD00551

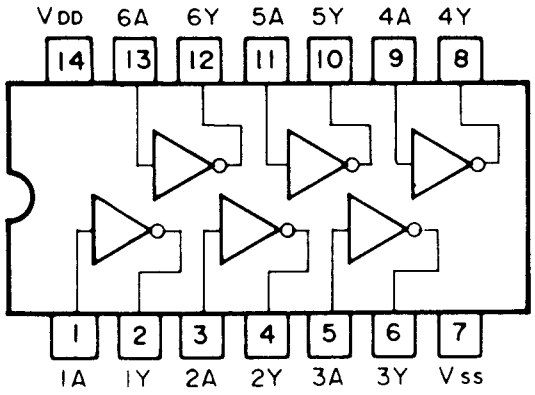


• Pin Functions (PD00551)

Pin	Pin Name	I/O	Function and Operation
1	$\overline{RAS}$	O	Low address strobe terminal for external DRAM
2	$\overline{WE}$	O	Write enable terminal for external DRAM
3	$\overline{OE}$	O	Output enable terminal for external DRAM
4	$\overline{CAS}$	O	Column address strobe terminal for external DRAM
5 ~ 8	RAM3IO3 ~ RAM3IO0	I/O	Data I/O terminal for external DRAM
9 ~ 12	RAM2IO3 ~ RAM2IO0	I/O	Data I/O terminal for external DRAM
13 ~ 16	RAM1IO3 ~ RAM1IO0	I/O	Data I/O terminal for external DRAM
17 ~ 24	A0 ~ A7	O	Address output terminal for external DRAM
25	VSS1		Ground terminal
26	VDD2		Power supply terminal
27	$\overline{RESET}$	I	Reset signal input terminal
28	$\overline{DRDY}$	O	Micro processor I/F data reception enable output terminal
29	RDATA	I	Micro processor I/F data input terminal
30	$\overline{RCK}$	I	Micro processor I/F clock pulse input terminal

Pin	Pin Name	I/O	Function and Operation
31	A/$\overline{D}$	I	Micro processor I/F address data discrimination input terminal
32	$\overline{CS}$	I	DASP chip select input terminal
33	CKSEL2	I	Select terminal for clock pulse output from CKOUT
34	CKSEL1	I	Select terminal for master clock pulse frequency
35	XSEL	I	Select terminal for oscillation/external clock pulse
36	WCK	O	Word clock pulse output terminal
37	64FSOUT2	O	64FS bit clock pulse output terminal
38	64FSOUT1		
39	32FSOUT2	O	32FS bit clock pulse output terminal
40	32FSOUT1		
41	LRCKOUT2	O	LR clock pulse output terminal
42	LRCKOUT1		
43 to 45	AOUT3 to AOUT1	O	Lch, Rch audio serial data output terminal
46	LRCKIN2	I	LR clock pulse input terminal 2 for reading in audio serial data
47	BCKIN2	I	Bit clock pulse input terminal 2 for reading in audio serial data
48	AIN2	I	Lch, Rch audio serial data input terminal 2
49	LRCKIN1	I	LR clock pulse input terminal 1 for reading in audio serial data
50	BCKIN1	I	Bit clock pulse input terminal 1 for reading in audio serial data
51	AIN1	I	Lch, Rch audio serial data input terminal 1
52	ADCLRCK	O	LR clock pulse output terminal to A/D converter
53	ADCBCK	O	Bit clock pulse output terminal to A/D converter
54	TEST3	I	Test mode terminal
55	CKOUT	O	Internal system clock pulse or master clock pulse 3/2 division output terminal
56	MOUT	O	Master clock pulse output terminal
57	VDD1		Power supply
58	VSS2		Ground
59	DRSEL	I	DRDY logic select terminal
60	XIN	I	Crystal oscillator connection terminal
61	XOUT	O	Crystal oscillator connection terminal
62	EXCK	I	External clock pulse input
63	TEST1	I	Test mode terminal
64	TEST2	I	Test mode terminal

TC74HCU04AF



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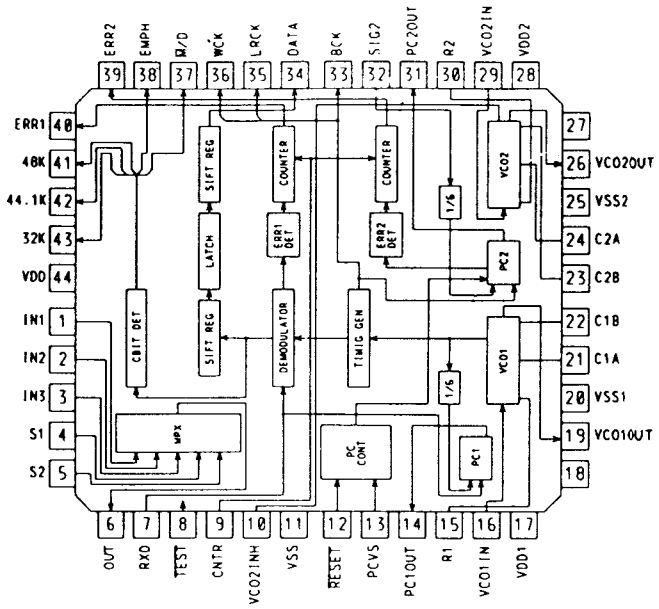

• Pin Functions (PD0075)

Pin No.	Pin Name	I/O	Function and Operation
1	IN1	Input	Data input 1.
2	IN2	Input	Data input 2.
3	IN3	Input	Data input 3.
			Digital audio data input of EIAJ format. (TTL level)
4	S1	Input	Input selector 1. (TTL level)
5	S2	Input	Input selector 2. (TTL level)
6	OUT	Output	Data MPX output.
7	RXD	Input	Data input. Normally connected to OUT(CMOS level).
8	$\overline{\text{TEST}}$	Input	Test mode input. Normally fixed at "H". (TTL level)
9	CNTR	Input	Counter clock input for ERR1/2 output time(CMOS level).
10	VCO2 INH	Input	For VCO2 oscillation stop. Oscillation stop at "H". (TTL level)
11	VSS		Logic VSS.
12	$\overline{\text{RESET}}$	Input	Power ON reset input.
13	PCVS	Input	VCO1/2 self-run frequency setting input.
14	PC1OUT	Output	Phase comparator 1 output.
15	R1		VCO1 regulating resistor connection terminal.
16	VCO1 IN	Input	VCO1 control voltage input.
17	VDD1		VCO1 VDD.
18			Not used.
19	VCO1OUT	Output	VCO1 output. (384fs)
20	VSS1		VCO1 VSS.
21	C1A		VCO1 regulating capacity connection terminal.
22	C1B		VCO1 regulating capacity connection terminal.
23	C2B		VCO2 regulating capacity connection terminal.
24	C2A		VCO2 regulating capacity connection terminal.
25	VSS2		VCO2 VSS.
26	VCO2OUT	Output	VCO2 output. (384fs)
27			Not used.

Pin No.	Pin Name	I/O	Function and Operation
28	VDD2		VCO2 VDD.
29	VCO2IN		VCO2 control voltage input.
30	R2		VCO2 regulating resistor connectin terminal.
31	PC2OUT	Output	Phase comparator 2 output.
32	SIG2	Input	V input of phase comparator 2. Normally connected to VCO2OUT.
33	BCK	Output	Demodulation data bit clock output.
34	DATA	Output	Demodulation audio data output.
35	LRCK	Output	Demodulation data L/R channel output. L channel at "H".
36	WCK	Output	Demodulation data word clock output.
37	$\overline{M}$/D	Output	MUSIC/DATA selection information output. MUSIC at "L"
38	EMPH	Output	Emphasis information output. With emphasis at "H".
39	ERR2	Output	2nd PLL UNLOCK output. UNLOCK at "H".
40	ERR1	Output	1st PLL data read error output. Error at "H".
41	48K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
42	44.1K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
43	32K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
44	VDD		Logic VDD.

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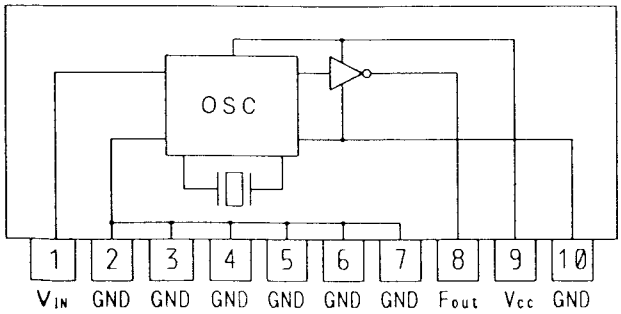
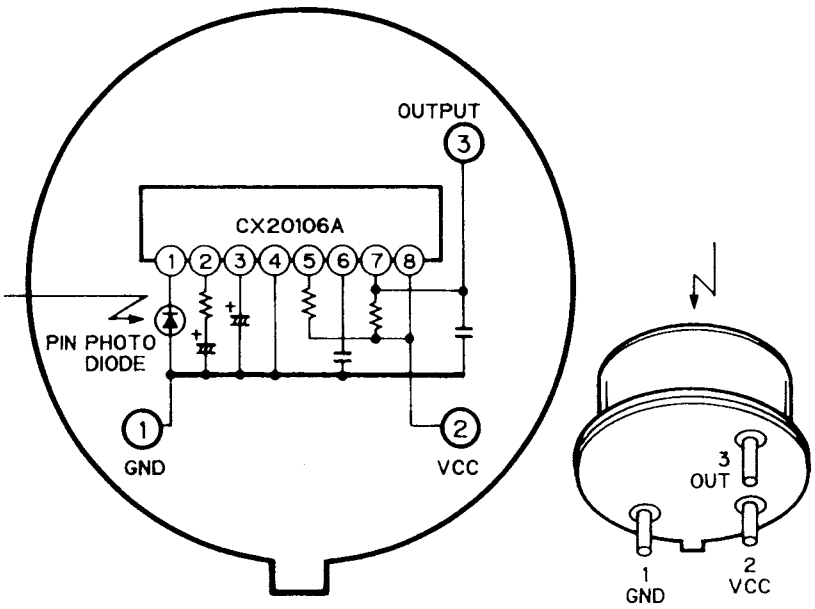


BX-1393

BX-1393 (BOTTOM VIEW)



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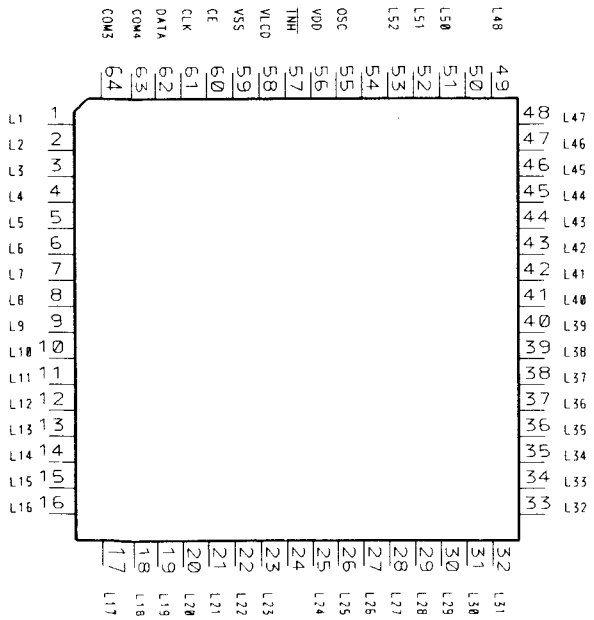
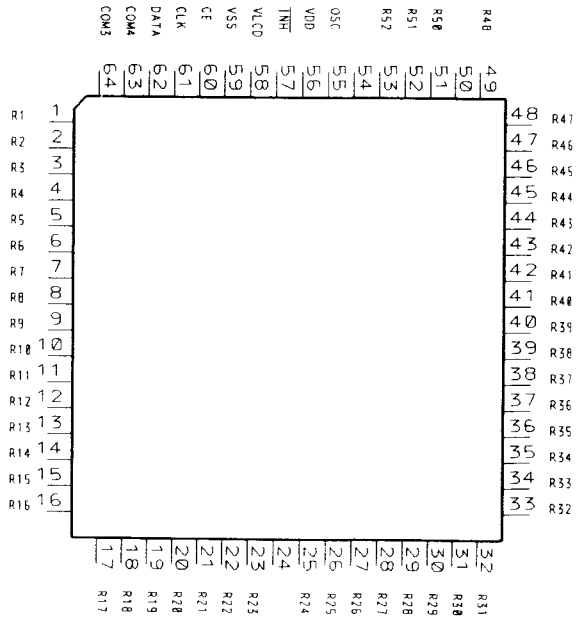
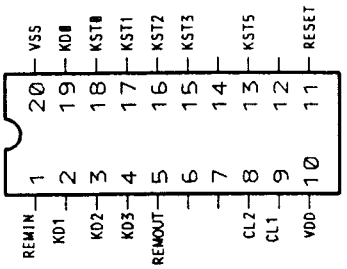




*PD4334B



• Pin Functions (PD4334B)

Pin	Pin name	I/O	Output Format	Function
1	REMIN	input		Remkote control input
2-4	KD1-KD3	input		Key matrix date input
5	REMOUT	output	NM	Key microcomputer outputts
6-7	NC	output	NM	Not used
8	CL2			System clock
9	CL1	input		System clock
10	VDD			Power supply
11	RESET	input		Reset input
12-18	KST6-KST0	output	NM	Key strobe output
19	KD0	input		Key matrix date input
20	VSS			GND

Output Format	Meaning
NM	Middle resistivity N channel open drain

SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.